

MONETARY ECONOMICS 102: GOLD AND INTEREST

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GOLD STANDARD UNIVERSITY

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Foreword

“*Monetary Economics 102: Gold and Interest*” intends to be the continuity of the already published first compilation of Prof. Fekete’s seminar - “*Monetary Economics 101: The Real Bills Doctrine of Adam Smith*”. Exactly as done for the first seminar, all the material here addressed is public and available as free downloadable pdf files at the Prof. Fekete’s website¹. The principal objective of the work is always the same, i.e., to bring the reader a more accessible and ordered way to approach the subject. The arrangement of the publication sticks, pure and exclusively, to the open-to-public material available at the mentioned website. It is merely intended under the form of a *free* publication and by no means it’s followed any kind of commercial purposes with it.

Apparently, this course should have consisted of 13 lectures too - exactly as the previous one. But, only lessons 1 to 6 are available at the website. Therefore, the reader will find that the last chapter of this anthology is Lecture 6: “*The Hexagonal Model of Capital Markets*.” This circumstance does not render the very original ideas that Prof. Fekete elaborated during these six lectures less valuable or attractive.

Following the previous format, the document was generated as a two-side Letter-size pdf document to facilitate those who wish to print it. Each chapter belongs to one of the correspondent lectures.

Finally, it seems necessary and dutiful to clarify for the reader that the text of the *Prologue* belongs to a *Note* wrote by Professor Fekete at the end of lecture 4 due to the resumption of the seminar between years 2003 and 2004. Based on its content, it seemed more appropriate to publish that Note as a Prologue rather than leave it as a footnote placed at the end of the chapter.

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Prologue

A Message to the Friends of Gold Standard University

Let me take this opportunity to remind you that I have developed my theory of interest in the spirit of Carl Menger, the founder of the Austrian school of economics. Still, my theory is flatly rejected not only by establishment economists but, curiously enough, by latter-day Austrians as well. Their antipathy is presumably due to their belief that any criticism of Ludwig von Mises, whom I also respect greatly, is sacrilege calling for excommunication. My theory of interest rests on the thesis that the marginal utility of gold is constant (while that of all other commodities is declining). This is the very property that imparts to gold its quality of “moneyness”.

However, in the Gospel according to Mises we read that constant marginal utility implies infinite demand which is contradictory (I agree); *ergo* gold cannot have constant marginal utility (I disagree). Mises simply missed the interrelation between gold and interest. The demand for gold is not infinite because interest acts as an obstruction to gold hoarding. (For other goods, obstruction is provided by declining marginal utility). Coming to grips with this fact is the key to the understanding of the predicament in which anti-gold propaganda has landed the world. Tampering with interest *ipso facto* means tampering with gold, and *vice versa*. The two cannot be separated, and it does not matter whether the country is on the gold standard or not. If you ban gold, then people will start hoarding other marketable commodities, which brings in its wake great economic dislocation such as the destabilization of the interest-rate structure, the Kondratieff long-wave cycle, and the runaway vibrator of extreme swings in prices and interest rates.

Prologue

I would like to draw your attention to the discussion in my Lecture 4 (see section under the caption “Inflationary and Deflationary Spirals”) of the so far unrecognized *macroeconomic* damage that the deliberate destruction of the gold standard has caused, in addition to the well-known *microeconomic* damage. The gold standard is blamed for causing depressions when in reality it is the best prophylactic against economic contractions. It was in fact the removal of the gold standard that has turned the Kondratieff long-wave cycle into a runaway vibrator programmed to self-destruct.

I believe what we are discussing in this course is very timely: we may be witnessing the turning of deflation into depression. The inflationary spiral that ended in 1980 was characterized by the hoarding of marketable commodities such as crude oil (incredibly, with the government of the United States as the greatest hoarder), grains, lumber, sugar, to mention but a few. 1980 also marked the beginning of the deflationary spiral of the Kondratieff long-wave cycle, characterized by dishoarding. It manifests itself as a slowing of price increases and outright price declines as producers are losing their pricing-power - the latter being so typical of the inflationary spiral. But the deflationary spiral is not over yet, as the plunge of interest rates to zero is still continuing. If American interest rates follow in the foot-steps of the Japanese, then we shall see the ugly face of depression, complete with bankruptcies, defaults, and wide-spread unemployment. Contrary to conventional wisdom, falling interest rates are not helpful to business: they are lethal. A more detailed analysis of this hidden mechanism is one of the tasks of this Lecture series, so please stay tuned. Another danger is that the Federal Reserve, in an effort to check deflation, will run the printing press overtime. The paper mill churning out unlimited amounts of new dollars may cause runaway inflation as foreign holders of dollar-denominated assets are frightened into dumping their holdings. It is not possible to predict whether the economy will succumb to depression or to runaway inflation. Ultimately, the issue will be decided by the bond-speculators and their risk-tolerance of carrying the burgeoning debt of the United States government in the face of the danger of a collapsing dollar.

There is still time for the United States government to steer clear of these dangers and, at the same time, to retain its monetary leadership in the world, provided that President Bush opens the U.S. Mint to the free and unlimited coinage of gold.

It will not be easy to admit that the Federal Reserve has pursued the wrong monetary policy for seventy consecutive years, cheered on by Big Government, Big Business, Big Labor, and Big Academia. Politicians, businessmen, labor

leaders, and economists must swallow their pride, and accept history's verdict that (whether they like it or not) gold is an integral part of the world economy and cannot be shunted into irrelevance. Gold will have a role to play in saving the nation and the world from a great disaster that is staring us in the face.

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Chapter 1

The Nature and Sources of Interest

(Lecture One)

Hoarding and Dishoarding

In this course I set out to develop a new theory of interest. Very little of what I have to say can be found in the existing literature. Here I make a new departure in introducing interest as the obstruction to gold hoarding that would be unlimited in the absence of interest, since the marginal utility of gold is constant. (Recall that, by contrast, the marginal utility of a non-monetary commodity does decline, setting a limit to hoarding). In this sense interest is analogous to a parking meter on a busy street which limits the demand for parking space that would be unlimited otherwise.

The cyclical nature of the physical and biological universe has prompted acting man to hoard the means of sustenance since time immemorial. While some animals also hoard (such as bees, squirrels), they do so instinctively and may ‘forget’ the size and location of their hoards. Man does hoard consciously and systematically. As shown in the Genesis through the example of Joseph (41: 34-36), hoarding is necessary during the seven fat years in order to provide the wherewithal through dishoarding during the seven lean years that are bound to follow. Today it is customary to ridicule the innate hoarding habits of man as being primitive and atavistic, pointing out that savings denominated in irredeemable currency are far superior, and they can be used for the same purpose with good effect. However, man can ignore the Biblical admonition only at his own peril.

Marginal Saving

As gold hoarding has been discouraged and sometimes severely punished by the powers-that-be, the theory of interest must also include a more general treatment of the hoarding of marketable goods which we shall call marginal saving. It is a proxy for gold hoarding and it has, for better or worse, survived to this day. The fact is that people always have saved in the form of hoarding marketable goods, regardless of the availability of gold and the attractiveness of fiduciary forms of savings and, probably, they always will. As we shall see, this residual hoarding or marginal saving influences, and is influenced by, the rate of interest. Unlike gold hoarding, marginal saving could not be prevented through coercion. No sooner does the government outlaw the hoarding of one marketable commodity than people will start hoarding another.

Marketability

The twentieth century witnessed the dismal failure of governments to provide an honest and reliable currency to serve as the common denominator for savings. Savers are continuously plundered as their savings are siphoned off through currency depreciation and debasement. One can hardly fail to see in this the ultimate incentive to hoard marketable commodities as marginal saving. However, it is important to see that even under the most stable monetary system marginal saving is present. For example, under the gold standard provident and thoughtful people found it necessary, natural, and prudent to keep a hard core of their savings in the form of various highly marketable goods. Their foresight was justified by later developments, as unprincipled governments have resorted to surprise devaluations combined with the criminalization of the ownership of gold, in order to prevent savers from using the monetary metal as a prophylactic against plunder through currency debasement.

It is therefore logical and necessary that an investigation into the phenomenon of interest should start with the problem of marketability and its two variants, salability and hoardability - those qualities that were instrumental in promoting gold as monetary metal. Theory and history show that as a result of an evolution lasting for centuries if not millennia, gold has become the most saleable as well as the most hoardable asset. De-monetization in 1971 did nothing to change that

fundamental fact. In particular, the value of gold, unlike the value of all other goods, is objective - as witnessed by the enormous size of the stores of gold (relative to current production) that private and public holders are willing and eager to carry in the balance sheet without any promise of return to capital, far in excess of their possible need for it. This is what makes gold the monetary metal par excellence. By contrast, the value of other goods is subjective. Of course, ultimately, the objectivity of the value of gold also has subjective roots. It has to do with the superb confidence of countless individuals (both living and deceased) in the reliability of gold as a store of value. Out of this subjective judgment has grown the objective fact that the store of gold in the world today is a high multiple of annual flows (at the present rate of output the stores-to-flows ratio for gold is in the order of 80, meaning that the stores of gold in the world are equivalent to eighty years of production). By contrast, for other goods the stores-to-flows ratio is a small fraction (in the case of copper, for example, it is about 0.25, meaning that the stores of copper in the world are equivalent to three months' production). If the stores-to-flows ratio for copper approached that of gold, then the value of copper would approach zero in the manner of that of drinking water, due to copper's declining marginal utility. Under these circumstances it is hardly reasonable to suggest that a theory of interest could ignore the fact of gold hoarding.

The Marginal Utility of Gold

According to Carl Menger, subsequent units of a commodity are valued less by the economizing individual than units acquired by him earlier. This is known as the Axiom of Declining Marginal Utility. If we rank commodities according to the rate of this decline, then we shall find that the marginal utility of one of them declines more slowly than that of any other. The commodity with this property is none other than gold. In fact, the marginal utility of gold declines so slowly that it is practically constant. It follows that gold hoarding must be limited by something other than declining marginal utility so that the demand for gold may not become arbitrarily large, and gold coins may stay in circulation. The fact is that the demand for gold is limited by the positive rate of interest channeling gold into monetary circulation, away from hoarding.

Ludwig von Mises¹ in *Human Action* denies that the marginal utility of gold is constant (*op. cit.*, p. 404). His reasoning is that constant marginal utility would mean infinite demand, which is contradictory. Thus, then, Mises failed to grasp the connection between gold and interest. Elsewhere in his book (p. 205) Mises denies that it is possible to construct a unit of value because two units of a homogeneous supply are necessarily valued differently, according to the Axiom of Declining Marginal Utility. Yet gold has successfully furnished the unit of value for thousands of years to many a flourishing civilization including our own. Later we shall see that our theory of interest departs from that of Mises in a number of other respects, too.

Critique of Existing Theories of Interest

Implicit in this approach is a critique of existing theories of interest. While they recognize that hoarding has been a primitive form of saving in earlier times, existing theories tacitly assume that in an advanced industrial society with well-developed capital markets hoarding is non-existent or, at any rate, not being practiced by intelligent and informed people, and so it can be safely ignored. However, as a little thought will show, marginal saving is present even in the most advanced modern economies. The objects of hoarding are as varied as the means are ingenious. The latter include inventory padding both at the level of input and output of production, as well as the deliberate use of leads and lags in warehousing. It also includes cutbacks in production quotas of marketable goods (such as crude oil, lumber, gold, etc.) which have been utilized for the same purpose in recent times with dramatic effect, as well as the slowing of the movement of goods in the pipelines by distributors. The list of marketable goods that are both hoardable and consumable is endless. It includes such items as salt, spices, spirits, sugar, tea, coffee, fragrances, drugs, etc., not to mention grains, energy carriers, and metals.

It would be an impossible task to estimate, however tentatively, the size of existing stores of marketable goods. Even if such estimates were available, it would be impossible to decide which parts of these stores were held for impending consumption and which were considered marginal saving by their owners. The only way to grasp the hoarding habits of people is through theoretical understanding.

¹Ludwig von Mises, *Human Action*, Third Edition, Chicago: Henry Regnery, 1966.

Propensity to Hoard and the Rate of Interest

The owners of stores of marketable goods periodically revise their quota of stored values held specifically for purposes of marginal saving. Various considerations will enter into their calculations, some of which obviously has to do with conditions prevailing in the markets where their surpluses can be traded. But there is one general and overwhelming consideration that invariably enters into their calculations and may move them to change the size of their hoards, always with the same signature uniformly for all marketable goods. This is none other than the height of the market rate of interest. If lower than the floor and falling, then people tend to increase; and if higher than the ceiling of the natural range and rising, then they tend to decrease their quota of marketable goods held for purposes of marginal saving (as distinct from hoards held for consumption).

The inescapable conclusion is that a relationship exists between the propensity to hoard and the rate of interest. If the latter is too high then there is a damping, and if it is too low then there is a buoyant effect on hoarding. The converse is also true: a change in the propensity to hoard does directly or indirectly influence the rate of interest through its effect on the relative prices of marketable goods on the one hand, and on that of bonds on the other.

Dichotomy False: Present vs. Future Goods

Part of the difficulty that a comprehensive theory of interest must face is due to the way the problem has traditionally been stated. It can be formulated as a question: *What happens when a man with present goods to spare but who is in need of future goods meets another with future goods to spare but who is in need of present goods?* I shall discard this as an unsuitable basis for the theory of interest. The bargaining positions of these two men are so different that no fair exchange can be expected to result from the encounter. Not surprisingly, it has always been in this context that usury was condemned by both criminal and canon law. We must look around for a more reasonable basis on which to construct a theory of interest.

Dichotomy True: Income vs. Wealth

It has never occurred to philosophers and moralists nor, for that matter, to most economists, that the nature and the sources of interest could be better grasped if the problem was presented in the form of a different question: *What happens when a man with income to spare but who is in need of wealth meets another with wealth to spare but who is in need of an income?* Fair exchange is indeed possible in this case. Just why the problem of converting income into wealth and wealth into income is important follows from the fact that man is mortal and he knows it. As he grows old, his former surplus of mental and physical energy will inevitably turn into a deficit. If he has failed to accumulate wealth in his prime years, then his twilight years are likely to be miserable. His needs would overwhelm his resources. He would lack the means to have the diseases plaguing him treated. To add insult to injury, he would be wide open to humiliation. However, if he has wealth, then he will be in control of his destiny despite his declining strength. He will be in a strong bargaining position: he can exchange a portion of his wealth for an income that will keep him in comfort and safety for the rest of his life.

Irreducible Form of Credit

The exchange of a present good for a future good is not an irreducible form of credit. Nor is a loan from A to B. These exchanges fall short of capturing the essence of interest. They could be viewed as the combination of two exchanges. For example, the loan from A to B is an exchange of the income of B for the wealth of A, later followed by the return of the wealth to A in exchange for restoring the income to B. Accordingly, we shall view the exchange of income and wealth as the irreducible form of credit to which all other credit transactions can, and must, be reduced. This also has the advantage of including the conversion (as distinct from exchange) of income into wealth through hoarding, and wealth into income through dishoarding, as a limiting case.

Principle of Capitalizing Income

Whenever provision for deferred consumption is made, it is done through converting income into wealth as a first step, to be followed by a second, converting wealth back into income. In this view income is perishable: ‘use it or lose it’, and conversion into wealth is the way to conserve it. The question of optimizing the conversion of income into wealth and wealth into income arises naturally. The answer can be found in the agency of credit and exchange. As I have observed already, in traditional accounts the most primitive form of credit is the exchange of a present good for a future good. I have discarded this view and replaced it with a more natural one that can be considered as the irreducible form of credit: the exchange of income and wealth. This represents a leap in the efficiency of direct conversion of income into wealth through hoarding, and that of wealth into income through dishoarding. We shall see that interest appears as the measure of the efficiency of exchange (as compared with that of direct conversion).

Exchanging income and wealth is possible because incomes, although perishable, can in fact be capitalized. As history and logic suggest, income is primary and wealth is derived (secondary). This was formulated by the American economist Frank A. Fetter as the Principle of Capitalizing Incomes. Early on scholastic philosophy recognized the importance of exchanging income and wealth for the benefit of society. In 1414 at the Council of Constance the principle was upheld that exchanging income for wealth involved no usury *per se*. Even earlier, St. Thomas of Aquinas (1225-1274) declared that a moderate discount on short-term commercial credit is not usurious and is therefore admissible. He justified the discount as a risk-premium and a compensation for lost income.

Structure of Capital Markets

From the point of view of mortal man income and wealth are distinct categories independent of one another. When he converts income into wealth, he merely obeys the law of the biosphere according to which all living things survive by saving their substance. There is no other way to go through the fat-year/lean-year cycle. In addition, the economizing individual must provide for his and his spouse’s old age, as well as for the education of his offspring.

The Square Model Featuring the Annuitand, Annuitant, Entrepreneur, and Inventor

The formation of the rate of interest is usually explained in terms of a diagonal model of the capital markets featuring two participants: the supplier and the user of 'loanable funds'. This model is woefully inadequate as it blots out the time element between the raising and repayment of the loan and, more fundamentally, the crucial process of capital formation. It ignores the Principle of Capitalizing Incomes. Our theory presented in this course will involve step-by-step refinement of the diagonal model into a square, a pentagonal and finally a hexagonal model of the capital markets. The square model has four participants: the annuitand (the man who is accumulating capital to support his future annuity), the annuitant (the man who is already drawing an annuity), the entrepreneur and, finally, the inventor. They are distinguished by their respective needs that they bring to the capital market to satisfy as follows. The annuitand needs to convert income into future wealth; the annuitant needs to convert wealth into income; the entrepreneur needs wealth in order to convert it into future income; and the inventor needs income in order to convert it into future wealth. The square model has the merit of clearly identifying the ultimate sources of supply and demand for wealth and income.

The four corners of the square represent the annuitand and the inventor plus the annuitant and the entrepreneur. Two kinds of partnership arise: that of the first pair represents the formation of R&D (research and development), and that of the second the formation of entrepreneurial capital. Often these partnerships are concealed under family bonds. The father is the annuitand (later, annuitant) and the sons the entrepreneur (or inventor). The family is the primitive social unit furnishing a framework for capital accumulation (for exchanging income and wealth).

Notice that there is another way to form partnerships by pairing the annuitand with the annuitant, and the entrepreneur with the inventor. The former is a partnership to supply credit, and the latter is one to utilize it. It is highly important to note, however, that the bargaining position of the two partnerships fails to be symmetric. The providers of credit: the annuitand and annuitant do not depend on the exchange in order to reach their ultimate end, unlike the users of credit: the entrepreneur and the inventor, who do. Zero interest means the denial of incentives

to proceed with the exchange of income and wealth. Given this denial, the providers of credit would abstain from the exchange and fall back on direct conversion. The annuitand would convert his income into wealth through hoarding; the annuitant would convert his wealth into income through dishoarding. It would be absurd for the annuitand to exchange his income for less future wealth than he could himself accumulate through hoarding; and for the annuitant to exchange his wealth for a smaller income than he could himself generate through dishoarding. The same is not true for the entrepreneur and the inventor. In the case of zero interest they are helpless. For them, zero interest is an un-surmountable obstacle to capital formation. The entrepreneur's potential income could not be generated in the absence of entrepreneurial capital. The inventor's potential wealth would not be realized in the absence of R&D capital. The square model of the capital market reveals that the exchange of income and wealth is inherently asymmetric. The annuitand and the annuitant could still satisfy their need to convert should the exchange fail; the entrepreneur and the inventor could not. For them it is no exchange - no conversion. The impaired bargaining power of the latter pair could be assuaged somewhat by admitting the capitalist as the fifth participant of the pentagonal model of the capital markets.

The Pentagonal Model Featuring the Capitalist

The partnership of the entrepreneur and the inventor is net long of future wealth and net short of present wealth. In order to make the partnership viable we introduce a fifth participant who is net long of present wealth and net short of future wealth. He is none other than the capitalist specializing in the exchange of present wealth for future wealth. This brings out the importance of the trinity of the entrepreneur, the inventor, and the capitalist. In the words of Ludwig von Mises, they represent the three most progressive elements in capitalist society, who benefit the non-progressive majority in every possible way. The particular combination of talent, brain and will-power represented by the threesome heralds a new epoch of progress, far beyond the capabilities of individual talents if employed in isolation.

The Hexagonal Model Featuring the Investment Banker

A final refinement is the hexagonal model of the capital markets and the introduction of the sixth and last protagonist of the drama of capital accumulation: the investment banker. The refinement is made necessary by the fact that no two annuities are alike. Yet trading them will still be possible if the differences are bridged over by the gold bond. The investment banker's function is clearing and brokering. He matches the varied demands thrown upon the capital market from its other five corners. He must be prepared to enter into partnership with the annuitant, annuitant, entrepreneur, inventor, or the capitalist, as the case may be, through his specialized instruments of annuity and mortgage contracts. At the same time he will balance his net liability or asset resulting from this activity through the purchase or sale of the standardized instrument, the gold bond.

The hexagonal model of the capital market brings about a great increase in scope for the most successful combination of capitalist production: the triangle of the entrepreneur, the inventor, and the capitalist mentioned earlier. From now on they can form their partnership even if unbeknownst to one another. The inventor need not waste time in seeking out a congenial entrepreneur, nor does the entrepreneur in finding a suitable inventor. Neither of them is at the mercy of the capitalist. If the invention is good and the enterprise is sound, then they could immediately start production on the most favorable terms through the good offices of the match-maker, the investment banker. Nor does the capitalist have to remain wedded to the same inventor and entrepreneur for the entire duration of the project. Through buying and selling gold bonds he can always go after the project that appears most promising to him. The problem of forming optimal triangles can safely be left to the bond market.

The Concept of Interest

Interest is an income in perpetuity which exchanges for the unit of wealth. The rate of interest is measured as a percentage of the unit of wealth that accrues to the beneficiary of the income in each one-year period. Thus, if the unit of wealth is one gold dollar and it exchanges for an income in perpetuity amounting to one gold cent per quarter, then the rate of interest is four percent per annum. Of course, an income in perpetuity is an abstraction. The bond is a contract drawn up for

a finite period. It involves two exchanges, with the second to reverse the first at the same rate of interest, so that the income flow becomes finite. In earlier times perpetual bonds (called consols by the British) were also offered to the saving public. Consols represented interest in its purest form. The British government defaulted on consols before defaulting on bonds, and withdrew the issue.

The Propensity to Save and the Rate of Interest

There is a mathematical relation between the market price of the bond and the rate of interest, called the Bond Equation, that I shall discuss in a future Lecture. The bond equation makes it possible to define the rate of interest in terms of the bond price. Thus we must regard the bond market as the place where the formation of the rate of interest takes place. The bond equation shows that the rate of interest varies inversely with the bond price. The reciprocal movement of the two we can compare to the seesaw: as the rate of interest goes up, the bond price comes down, and vice versa. This is a mathematical, not a statistical law, tolerating no exceptions. The seesaw can be paraphrased by saying that the rate of interest and the propensity to save are in an inverse relationship with one another: the higher the propensity to save the lower will be the rate of interest and vice versa. The seesaw plays a fundamental role in our analysis of the formation of the rate of interest.

It is important that only gold bonds may enter these considerations. A bond payable at maturity in irredeemable currency is a promise that is fulfilled by making another irredeemable promise. In effect, it is a promise to defraud in exactly the same way as the promise of Charles Ponzi to pay interest at the rate of 100 percent *per annum* has been. No serious student of interest can take such bonds for anything but a cruel joke on the public. The Criminal Code calls for severe punishment for deliberately defrauding the public through confidence games and Ponzi-schemes. The issuance of irredeemable promises to pay, be it interest-bearing such as a bond or non-interest bearing such as a bank note, fully exhausts the concept of fraud. Governments have interfered with the justice system by blocking citizens and creditors who wanted to sue it in court. Not only are injured parties denied justice, they are also denied a public hearing of their case. Worse still, irredeemable currency violates the monetary provisions of the American Constitution. We are witnessing the shameful corruption of the justice system and trampling on the

Constitution. For this not only the politicians but also jurors and legal scholars must share the responsibility. The day of reckoning will come when the economic system based on the house of cards of irredeemable currency will collapse causing the people to suffer excruciating economic pain.

The Gold Standard as the Stabilizer of the Economy

One of the cardinal points about the gold standard as it is remembered today is that it was an attempt to stabilize the price level - an attempt that has failed. But it would be closer to the truth if the gold standard were remembered as an attempt to stabilize the interest rate structure - an attempt that has succeeded. While interest rates had their ups and downs as part of the long-wave economic cycle under the 19th century gold standard, these undulations were minuscule in comparison to the wild gyrations displayed after the link between currencies and gold was severed in the fourth quarter of the 20th century.

Stabilization of prices is neither possible nor desirable. Price changes are part of the signaling mechanism of the economic system that regulates both production and consumption. By contrast, the stabilization of interest rates is both possible and desirable. Unstable interest rates lead to general economic instability, including that of prices, production, saving, and investment - all to the detriment of economic welfare. At worst, they could trigger uncontrollable resonance between commodity prices and interest rates. That would create a runaway vibrator, bringing about economic collapse in the form of hyperinflation (with the economy succumbing to infinite interest) or deflation (with the economy succumbing to zero interest).

The stabilization of interest rates would benefit everybody. It was a tragic mistake to discard gold from the monetary system in complete disregard for the damage it would do to the stability of the interest rate structure. The extreme volatility of interest rates has been plaguing the world economy since 1971. In spite of appearances, current low rates don't spell stability. They are the quiet just before the approaching storm.

Disequilibrium Theory of Price Formation

I conclude this Lecture with a preview of the follow-up course Monetary Economics 202 on the formation of the rate of interest. Carl Menger revolutionized economics by throwing out the equilibrium theory of price formation to replace it with a disequilibrium theory. He observed that the market quotes not one but two prices, a higher asked price and a lower bid price. Transactions may take place anywhere within the range determined by these two. We have to study two independent market processes, one responsible for the formation of the asked price, and another for that of the bid price. It turns out the asked price is the outcome of the competition of the consumers, while the bid price has to do with that of the producers.

Competition takes the form of arbitrage. Being the combination of a sale and a purchase, arbitrage is the most comprehensive form of human action. The market price is not the result of supply/demand equilibrium, but the outcome of a convergence process whereby it is confined to an ever-narrowing range determined by the vanishing spread. Disequilibrium, or a lower state of coordination is being replaced by a higher one which, however, still reflects disequilibrium and calls for further adjustments. The disequilibrium theory of price formation is superior to the equilibrium theory as it does away with the spurious notions of supply and demand. It reflects reality more closely. It shows that the price is not a state but, rather, the outcome of a convergence process.

In more detail, the asked price is formed through the horizontal arbitrage of the marginal consumer, and the bid price is formed by the vertical arbitrage of the marginal producer. The marginal consumer is the first to refuse to buy the uptick in price, and horizontal arbitrage means that he is ready to buy a cheaper substitute. The marginal producer is the first to refuse to sell the downtick in price, and vertical arbitrage means that he is ready to buy cheaper substitutes for the producer goods at his input. We see that the asked price is determined by marginal utility. It can be characterized as the lowest price at which consumers can buy as much as they want without haggling - explaining how the asked price earns its name. The bid price is determined by marginal profitability. It can be characterized as the highest price at which producers can sell all they have without haggling - explaining how the bid price earns its name. The spread between the asked and bid prices is closed by the arbitrage of the market makers. To recapitulate:

The asked price of a consumer good marks the point where the opportunity cost of buying an additional unit becomes critical to the marginal consumer. He is the first to refuse to buy the uptick, in view of his opportunity to buy a substitute.

The bid price of a consumer good marks the point where the opportunity cost of selling an additional unit becomes critical to the marginal producer. He is the first to refuse to sell the downtick, in view of his opportunity to substitute a new producer good at his input.

Disequilibrium Theory of the Formation of the Interest Rate

The rate of interest, no less than prices, is a market phenomenon. Once again we find ourselves in disagreement with Ludwig von Mises. He postulated in *Human Action* that “the loan market does not determine the rate of interest, but adjusts it to the rate of originary interest as manifested in the discount of future goods” (op. cit., p. 527). For us, the formation of the rate of interest is the result of a market process, analogous in every detail to that responsible for the formation of prices.

Our starting point is the observation that the bond market also quotes two prices, the higher asked and the lower bid price for bonds. In view of the seesaw, the asked price corresponds to the floor, and the bid price to the ceiling, of the range to which the rate of interest is confined. Bonds may change hands anywhere within the range determined by the asked and bid price. We have to study two independent market processes: one responsible for the formation of the asked price for bonds (or the floor for the rate of interest), and the other responsible for that of the bid price (or the ceiling for the rate of interest). It turns out that the former is the outcome of the competition of bondholders, while the latter is the outcome of the competition of entrepreneurs.

Competition takes the form of arbitrage. Bondholders engage in arbitrage between the bond market and the gold market; and entrepreneurs between the bond market and the stock market. In more details, the asked price for the bond is formed by the horizontal arbitrage of the bondholders, and the bid price by the vertical arbitrage of entrepreneurs. Bondholders won't let the bond price go sky high. They will take profit in selling the bond and stay invested in gold until bond prices come back to earth. Entrepreneurs won't let the bond price to keep

falling forever. They will step in and buy the bond out of the proceeds of selling their stock. Thus the floor for the rate of interest is determined by marginal time preference. It can be characterized as the highest rate of interest which savers still refuse to accept. The ceiling for the rate of interest is determined by the marginal productivity of capital. It can be characterized as the lowest rate of return on capital that entrepreneurs will still accept before they go out of production and invest the proceeds from the sale of their capital goods in bonds. The spread between the floor and ceiling is closed by the arbitrage of the market makers in bonds. To recapitulate:

The floor for the rate of interest marks the point where the opportunity cost of holding the bond becomes critical to the marginal bondholder. He is the first to sell his bond upon the next downtick in the rate of interest, in view of his opportunity to carry his savings in the form of a present good, gold, instead of a future good, the bond.

The ceiling for the rate of interest marks the point where the opportunity cost of owning capital goods becomes critical to the marginal entrepreneur. He is the first to buy the bond upon the next uptick in the rate of interest, in view of his opportunity to sell his stocks and carry earning assets in the form of bonds rather than capital goods.

I urge my audience not to get discouraged if this material appears to be too concentrated to digest at once. After all, this is a synopsis of a future course, Monetary Economics 202: The Bond Market and the Formation of the Rate of Interest. We shall treat this subject in much greater details in future Lectures.

A Tale of Two Schools

Our new theory of interest can be described as a synthesis between two well-established schools: the time preference and the productivity school of interest. They are competing, antithetical schools, and a fratricidal war between their adherents has long retarded theoretical progress.

According to the time preference theory of interest a time premium exists, and is incorporated in the price of present goods over that of future goods. This time premium is a category of human thought in much the same way as our concepts of space and time are, and it exists independently (and even in the absence) of production. By contrast, the productivity theory of interest insists that it is the marginal productivity of capital that determines the height of the rate of interest,

regardless whether capital is provided by nature or by savings. On the face of it irreconcilable antagonism exists between the two positions. Yet a synthesis between the two opposing schools is possible, as our disequilibrium theory of the formation of the interest rate shows.

The Gold Coin and the Rate of Interest

To conclude, gold furnishes the mechanism whereby savers could have input in the formation of interest. If dissatisfied because rates were too low, they could force the banks to take their marginal time preference into consideration. The mechanism had teeth. Gold hoarding was effective. Not only was it a symbolic protest vote against credit policies suppressing the rate of interest to unreasonably low levels; it did bring about the desired changes. Since gold coins served as bank reserves under the gold standard, by withdrawing their deposits and converting their notes into gold coins savers could force the banks to contract outstanding credit. Moreover, a continuing squeeze on bank reserves could not help but alert legislators that people were unhappy with profligate government spending financed through the banking system. They could amend their ways by eliminating wasteful spending. The system of checks and balances worked well during the first 150 years of the American Republic. Not government bureaucrats but the saving public regulated the rate of interest. Regulation was for the benefit of everybody, not just for the benefit of a small minority, however influential. The tool of this regulation was the gold coin.

It is not surprising that the gold standard was unpopular with governments, for it has been a fetter on buying votes through public spending. Governments couldn't perpetuate their power by promising pie in the sky. Frugality was a virtue and profligacy a vice, especially when it came to the public purse. The electorate could express its displeasure with government spending and throw profligate governments out of power. Not only did it have the ballot paper, the electorate also had the gold coin with which to vote. And vote it did, on every business day. If it did not like the credit policies of the banks and the government the whip, gold hoarding, was at hand. It was not only the politicians with whom the gold standard was unpopular. Economists did not like the gold standard either. They looked at it as you would at a naughty child who blurts out embarrassing truths.

The first attack on the gold standard came from the British economist David Ricardo (1772-1823). In 1819 he proposed his 'bullion plan' according to which gold coins should be withdrawn from circulation. Gold should be held by banks in bullion form for the purpose of redeeming notes and deposits, the required minimum being the standard gold bar of 400 oz, or approx. 12.5 kg. Clearly, this plan was designed to short-circuit gold's role in the regulation of the rate of interest. The marginal bondholder would be frustrated whenever he wanted to protest the artificially low rate of interest. Of course, he could sell his bond, but in doing so he would be jumping from the frying pan into the fire. He would have to hold bank notes, so that he would get zero interest in place of the low rate of interest he wanted to protest. The marginal bondholder was denied the gold coin he would need in order to make his protest effective.

Interest Under the Regime of Irredeemable Currency

The synthesis between the time preference and the productivity theory of interest assumes that there is no government interference in credit relations. Our theory of interest is only a first approximation to the problem, as it is valid only under the regime of the gold standard. However, it can be extended to the regime of irredeemable currency which is characterized by massive intervention of the government and its central bank in the credit markets.

Since time immemorial governments have been predisposed to intervene on behalf of the debtors and to the prejudice of the creditors. There may have been ideological motivation for this, but it is more likely that governments were pursuing self-serving policies. They were debtors themselves. They wanted easy money in order to aggrandize and perpetuate their own power. They have done all they could to compromise the sovereignty of the saver. Through various measures such as fomenting credit expansion or inflation, and through obstructing the free flow of gold, they have tried to undercut the importance of saving and to promote the cause of spending. The regime of irredeemable currency must be seen as the fulfillment of those early aspirations.

The Ratchet and the Linkage

Recall that when access to gold is inhibited or denied, as it has been with increasing frequency and intensity throughout the entire history of the gold standard, gold hoarding is superseded with similarly increasing frequency and intensity by the hoarding of marketable commodities. People would increase their marginal savings. This hoarding can also be characterized as ‘inventory inflation’ financed through the liquidation of bond holdings in response to artificially low interest rates. As I have pointed out, hoarding bank notes would be counter-productive. It would be practiced by simpletons only.

My notion of inflationary and deflationary spirals is very different from that of mainstream economics. It goes back to the Swedish economist Knut Wicksell (1851-1926). The initial impetus of credit expansion pushes the market rate of interest below that of marginal time preference, making the propensity to hoard increase. It triggers a first round of purchases of marketable goods for hoarding purposes with the proceeds from the sale of bonds. Marginal savings grow. While selling pressure on bonds increases interest rates, buying pressure on goods increases the price level. The higher price level will increase marginal time preference. When prices are expected to rise, the marginal saver will demand compensation in the form of higher interest rates. The net result is that, once again, the market rate of interest is below the rate of marginal time preference, and the propensity to hoard increases.

This will trigger a second round of purchases of marketable goods for hoarding purposes financed through further liquidation of bond holdings. The inflationary spiral repeats itself at a higher level of prices and interest rates. Thus a ratchet is engaged whereby subsequent rounds of increases in marginal savings pushes commodity prices as well as the rate of interest to ever higher levels. It may take decades for the inflationary spiral run its course. It is not possible to predict when the spiral will turn around. At any rate, high and increasing prices coupled with high and increasing interest rates will eventually lead to panic. People realize that further increases in the rate of interest would threaten the value of their marginal savings. Liquidation of marginal hoards of marketable goods begins. This spells a deflationary spiral, to which the inflationary spiral gives way, featuring ever lower propensity to hoard, or inventory deflation. There is a drawn-out process of dissipating excessive stockpiles. The collapse in demand for newly produced goods causes business lethargy, as reflected by falling interest rates along with falling

prices. It may take decades before business confidence can be rebuilt and economic expansion resumed, signaling the end of the deflationary spiral. It goes without saying that credit expansion will spark a new round of the cycle before long, and the process will go on and on. This, then, is the long-wave inflation/deflation cycle, also known as the Kondratyeff cycle.

Note that the ratchet-effect is also responsible for the linkage between the movement of the rate of interest and that of the price level. With due allowance for leads and lags, the price level and the interest-rate structure are linked, and must move in the same direction. Linkage has been noted by several economists, but reasoning in terms of linear models (such as that of the quantity theory of money) has failed to provide an explanation of the phenomenon. Only partial explanations have been given, so that linkage is still something of a mystery. My explanation is in terms of a non-linear model. An increase in the propensity to hoard induces a long-term money-flow from the bond market to the commodity market, ultimately leading to panic, turning the money-flow back. Thus we have an oscillating money-flow between the bond market and the commodity market which was caused in the first place by the government in sabotaging and finally destroying the gold standard.

The linkage represents economic resonance between the price level and the rate of interest. The danger is that this resonance may cause amplitudes to increase without limit. Just as in physics, resonance could cause runaway vibration culminating in the self-destruction of the system. In economics, self-destruction is realized by hyperinflation (that may be described as the blackhole of infinite interest), or deflation (the blackhole of zero interest).

Note how the natural stability of the economic edifice has been perverted by the removal of gold. Hoarding makes for stability under the gold standard, as it is self-limiting through the interest-rate mechanism. But when gold is removed from the system, or when its free flow is inhibited by the governments, hoarding becomes cumulative, as a ratchet sends both the price level and the rate of interest ever higher which continues until panic puts an end to it. At that time a slow and painful process of dishoarding starts that will send the price level as well as the interest rate structure spiraling downwards. Each repetition of the cycle brings higher amplitudes in its wake for both the price level and the rate of interest, higher than those of the previous one. As the interest-rate cycle resonates with the price-level cycle, a runaway vibrator is activated.

Between Scylla and Charybdis

The long-wave inflation/deflation cycle is aggravated rather than alleviated by central bank intervention. Directly or indirectly, contra-cyclical monetary policy amplifies the oscillating money-flow back-and-forth between the bond market and the commodity market. An accurate reading of the present situation is that after the inflationary spiral lasting for forty years, culminating in the 1980 price explosion, the world economy saw a panic ushering in the deflationary spiral that still continues. Prices and interest rates peaked in 1980 when dishoarding started. It is true that the downward ratchet of the interest-rate structure is more obvious than that of the price level, but you would be well-advised to watch for a very painful erosion of prices and profits as firms keep losing their well-advised pricing-power. Central bank intervention is counter-productive. As it tries to 'reflate' by injecting new cash into the economy, the central bank will only pour oil on the fire. Whenever it wants to inject new cash, the central bank goes to the bond market to buy bonds. But in doing so it will only join the crowd of frenzied bond speculators already busy in bidding up bond prices and pushing down interest rates as part of the deflationary process. As a matter of fact, speculators have taken it for granted that the central bank will act that way thereby taking the risk out of bond speculation. The new money injected in the economy, which the government has hoped that it would flow to the commodity market and bid up prices there, does instead flow to the bond market where the fun is. It stokes the fires of the boom there pushing interest rates further down and, due to the linkage, it makes prices fall as well. Far from putting an end to the deflationary spiral, central bank action depresses the economy even more. Unless, of course, the deluge of new money injected in the economy scared bond speculators in causing them to cut and run. As they dumped their bonds, they would make bond prices, and the value of irredeemable currency, collapse.

There is not enough room between the Scylla of inflation and the Charybdis of deflation to squeeze through. Before the central bank can navigate the economy to safety, further slimming appears necessary.

Chapter 2

The Exchange of Income and Wealth

(Lecture Two)

Direct and Indirect Conversion of Income and Wealth

The nature of interest is one of the great problems of humankind, as old as money itself. It has engaged the greatest minds, from Aristotle through St. Thomas of Aquinas and other Church fathers to Carl Menger. The lack of a satisfactory solution to the problem has rocked empires, contributing to their destruction. Your lecturer hopes that his efforts can make a modest contribution to the ultimate disposal of this great and vexed problem.

Part of the difficulty is in the way the problem has traditionally been presented, namely: What happens when a man with a need to borrow meets another with money to lend? It was always in this context that usury has been condemned by both criminal and canon law. It hasn't occurred to philosophers and moralists - or, for that matter, to most economists - that the nature of interest could be better grasped if the question was reformulated thus: What happens when a man with wealth to spare but who is in need of an income meets another with income to spare but who is in need of wealth?

What is of great significance for our purposes is that the resulting exchange represents the passage from direct to indirect conversion of income and wealth. By direct conversion of income into wealth is meant hoarding, and by direct conversion of wealth into income is meant dishoarding of a fungible commodity. Since direct conversions are cumbersome and inefficient, the passage to indirect conversion or

exchange represents an improvement. Interest can be thought of as the measure of this improvement. In particular, zero interest means direct conversion. Given zero incentive, those who have surplus wealth will obviously forgo indirect conversion or exchange and will, instead, fall back on direct conversion. That is to say, they will provide for deferred consumption by first hoarding and, then, dishoarding.

The passage from direct to indirect conversion of wealth and income is analogous to the passage from direct to indirect exchange of goods, that is, the evolution from barter to the monetary economy. This was the idea which Carl Menger used so brilliantly in explaining the origin of money in terms of *salability*. In this course we shall introduce an analogous idea in order to explain the origin of interest in terms of *hoardability*. In the next Lecture we shall see that salability and hoardability are just sub-varieties of *marketability* (the German word, used by Menger, is *Absatzfähigkeit*). That these two concepts represent special aspects of marketability can be seen clearly if we contemplate that salability is “marketability in the large” and hoardability is “marketability in the small”. Thus, then, the proper setting for the study of interest is the indirect conversion of income into wealth and wealth into income, just as the proper setting for the study of prices is the indirect exchange of goods. It now appears that blanket condemnation of usury is akin to condemning a man for charging (or paying) the going price of bread.

The exchange of a present good for a corresponding future good is not the irreducible form of credit. It can be reduced to two exchanges: first, the exchange of the present good for an income and, second, after a mutually agreed period of time, the return of the same income to its original beneficiary in exchange for the same quantity and quality of good. In this way we see a second reason why the exchange of wealth and income, rather than that of a present and a future good, is the true centerpiece of the theory of interest. A third reason presents itself in the context of history. The act of exchanging a present good for a future good was hardly part of the repertory of our ancestors in the more primitive economic setting under which they labored. By contrast, we know for a fact that the exchange of present for future labor was widely practiced: “I help you build your house, and you help me build mine; we shall build yours first because I am not quite ready to start as yet.” It is far from obvious, however, that interest was necessarily part of such exchanges. The practice of exchanging present for future goods, on the other hand, was a later development which already assumed the existence of a lively market for the exchange of income and wealth.

Can a Present Good Ever Go to a Discount Against Its Future Counterpart?

The very idea of a dichotomy between present and future goods is false. The future is a closed book to man. He knows not what the future holds for him. He cannot know what his future needs and valuations will be. Even his taste is subject to change, and he is as ignorant about his own preferences in the future as he is of those of another person. His entire value-system may be revamped as a result of new products appearing in the market. The tenet that there is an intrinsic discount on the value of any future good in relation to that of a corresponding present good, which is independent of the choice of the good itself, is open to serious challenges. It is easy to give an example of a future apple having a value higher than that of a present apple. Take the case when the only apple orchard in the vicinity has been destroyed by a landslide, just after the apple-harvest. In our complex economy the idea of an automatic discount on future goods is even more absurd. Suppose that the construction of an observatory takes one year to complete. We may assume that the most expensive part of the project is the telescope itself that is being built elsewhere and would have to be delivered to the site. However, it can only be installed after the building is finished one year hence. If the telescope was delivered to the site today, it could be damaged during the year of forced idleness, so storage and insurance costs would be incurred, reducing its present value below its future value. The objection that the telescope could be rented out for one year is open to the same criticism. We may assume that no building suitable for the installation of this particular telescope exists anywhere, and constructing one would also take one year.

This is no ice-in-summer/ice-in-winter counter-example to refute the thesis about an automatic discount on future goods. As the economy is getting ever more complex, the manufacture of big-ticket items is getting ever more roundabout and more time-consuming. The delivery of the complementary factors of production must be dove-tailed with an air-tight schedule to assemble them. Serious losses may occur if the delivery of a factor is out of sync. The future value of such a factor is, therefore, represented not by a declining but by a bell-shaped curve. Along this there is an optimal value surpassing all other future values, as well as the present value. It follows that a present good can and does indeed go to a discount against its future counterpart.

The idea that this could never happen is the foundation supporting the theorem that the rate of interest can never be zero, let alone negative. What our argument shows is not that the rate of interest can sometimes be negative, but that the approach to the theory of interest through the dichotomy of present versus future goods is false. There is no apodictic reason to value a present good more highly than the corresponding future good. We can show that the rate of interest is always positive by discarding the paradigm of present versus future goods, and replace it with the paradigm of income versus wealth. Zero interest now appears possible, but only at the cost of stamping out indirect conversion or exchange.

The Concept of Wealth and Income

We have seen that the dichotomy of present versus future wealth is false. We shall now see that the true dichotomy, giving rise to interest, is that of income *versus* wealth. By wealth we mean any desirable piece of property held for an extended period of time. As objects of human desire are varied, the concept of wealth is broad. But as it is always the case in human affairs, disadvantages offset advantages, and the ownership of wealth is no exception. The main disadvantages associated with wealth are illiquidity and declining marginal utility. Illiquidity refers to contingent losses, measured in money and time, that go with exchanging one form of wealth for another. As a result, the value of wealth may well erode with the passing of time. Thus, then, even the wealthiest individual has the thorny problem of husbandry to tackle. He had better make sure that the value of his wealth would not diminish, lest it disappear altogether. If he could not make his wealth grow, he might end up as a pauper.

The problem of wealth immediately leads to the problem of income. Wealth is unsuited for direct consumption. Before consuming it, wealth needs to be converted into income. Indeed, we must sharply separate the two concepts. Income is conceived as a steady flow of goods and services. By its very nature, income is perishable. If not used presently, its value may evaporate. Therefore the economizing individual divides his gross income into two components: income-to-be-consumed and income-to-be-saved. He converts the latter into wealth which he plans to convert again into income later, as the need arises. There are problems with these conversions. The value of income and wealth must be secure. The risk of letting

the quality and quantity of goods and services that make up the income erode must be reduced to its irreducible minimum.

Converting Income into Wealth and Wealth into Income

For the sake of simplicity the phrase: “converting income into wealth” will be used to mean “converting income-to-be-saved into wealth” and, correspondingly, “converting wealth into income” will mean “converting wealth into income-to-be-consumed”. A typical wage-earner uses only part of his wage-income for consumption; the other part he earmarks for saving in order to increase his wealth. If his consumption needs are fully covered, then he will convert his entire income into wealth. Otherwise, he will augment his consumption using part of his wage income, and save only the remainder. If his wage income is not sufficient to provide for his consumption needs, then he will supplement it by converting an appropriate portion of his wealth into income in order to maintain his level of consumption.

From the point of view of mortal man wealth and income are distinct categories independent of one another. When accumulating wealth, man merely obeys the law of the biosphere according to which the demands of survival force one to save one's substance, in order to provide for the seven lean years ahead while the seven fat years last. In particular, the economizing individual wants to provide for his and his spouse's old age, knowing full-well that the time is coming when reward for his efforts will fail to cover his needs, and he will need wealth to convert it into income in order to maintain his consumption. Another typical activity is accumulating wealth that the economizing individual will need at the time his offspring comes of age. Whether he wants to give part of this wealth to his daughter as a dowry, or whether he wants to convert it into income to defray the cost of higher education of his children, his family responsibilities will prompt him to save. Even in the case of a miser it is a mistake to dismiss his saving habits as irrational. Maybe he has an undisclosed plan to donate his wealth to a particular charity after he has reached his savings goals. Or, maybe, he wants to leave his wealth to an eleemosynary institution at the time of his death. Even if he has no plans how to dispose of his wealth, his savings are not wasted. Society is a beneficiary. One's savings may make another's investing easier. At the very least, savings contribute to price stability. There is no such a thing as “oversaving” from the point of view of society. All savings are pooled in the form of wealth, and this communal

pool is drawn upon whenever the saver, or the beneficiary of his estate, is ready to use the income for which his share of the wealth may be exchanged. This is also true for direct conversion. If the individual saves in the form of hoarding gold coins, for example, then the social benefits of his savings show up in lower prices and interest rates. Keynes' theory, according to which deflation (falling prices) is caused by collapsing aggregate demand due to oversaving, is thoroughly unscientific. Depression is caused by falling interest rates generating a bull market in bonds. It is the gravitational field of that bull market that diverts money away from the stock, commodity, and real estate markets, creating the optical illusion that 'money is scarce'.

Exchanging Income and Wealth

Conversion of income into wealth is a broad concept that includes, as a special case, indirect conversion, that is, the exchange of income for wealth, and the same is true of the conversion of wealth into income. We have discarded the idea of exchanging present and future goods as the basic problem of interest, and replaced it with the irreducible form of credit: exchanging income and wealth. These exchanges arise out of identifiable, immediate, and concrete human needs - having to do with the problem of ageing. By contrast, the exchange of present for future goods is a barren concept. It is not grounded in any immediately identifiable human need. Insofar as it arises at all, it is always in the context of the irreducible forms of credit. Our innovation in considering indirect conversion immediately shows the great improvement in efficiency over direct conversion. A smaller quantity becomes the exchange-equivalent of a larger one, thanks to the intervention of time. Thus a certain quantity of gold exchanges for an infinite stream of payments in gold, that is to say, for an amount of gold that can be arbitrarily large, depending on time. Yet the exchange is fair, because of the commitment to reverse it at a specified future date. Before anyone may jump to the conclusion that such exchanges are not possible because an infinite quantity is never equal to a finite one, I hasten to point out that they are in fact a common occurrence. For example, a fertile piece of land can be bought at a finite price in spite of the fact that rents derived from it will, if held indefinitely, add up to infinity.

The vital difference between wealth and income, from the point of view of mortals, is put into high relief in the comedy of King Midas and the tragedy of

King Lear. The former was unable to convert his wealth into income and, as a consequence, was in danger of starving to death in spite of his great wealth. The latter exchanged his wealth for income unwisely and without proper guarantees and, as a consequence, he was left without food and shelter when he would need it most. These examples illustrate that conversion of wealth into income could, under certain conditions, become a matter of life and death. Society has, therefore, a great responsibility to facilitate and guarantee the exchange, and to remove all obstacles that may frustrate the intentions of the contracting parties.

The distinction between income and wealth, inviting exchange, has been recognized throughout history. I would like to mention two examples: the rent-charge and the triple contract.

Rent Charges

From the twelfth to the sixteenth century the sale and the purchase of rent charges was the most common form of exchanging wealth and income. In the Middle Ages real estates were so encumbered with legal conditions that they could hardly ever be sold outright. All the owner could do was to sell the annual rental income from his estate, which the new beneficiary could in turn sell to a third party. The right to collect rent from a piece of property that you did not own was called a 'rent charge'. (For a modern example consider the 'strip bond', where the coupons have been separated from the bond itself and sold to a new beneficiary. There developed a lively market where income and wealth were exchanged. The market value of rent charges was expressed, not as a percentage as was interest, but as a multiple. In other words, it was quoted as the number of years the rent charge would take to amortize its purchase price. Thus when a rent charge was quoted at 'twenty years', the meaning was not that the right to collect the rent extended to a twenty-year period; but that the new beneficiary had the right to collect the rent, in perpetuity, against the payment of a sum equal to twenty times the prevailing annual rent. Of course, this was tantamount to saying that the purchaser of the rent charge has converted his wealth into income at a rate of interest of 5 percent *per annum*, but that mode of quoting rent charges for sale was shunned. The difference in the manner of quoting capital offered to prospective borrowers, and rent charges bid for by those in need of an income, confused the issue in the minds of the people who assumed that no interest hence no usury was involved in the

rent charge. Usury, they thought, was present only when capital was put out at interest. It would disappear when income was to be capitalized - even though the two transactions were just the opposite sides of the same coin. To maintain this pretence was important during the prohibition era, when canon as well as criminal law forbade the charging and paying of interest on a loan of capital (while the transfer of the right to collect the rental against the payment of a lump sum was exempted).

Confusion about the capitalization of income still prevails, and is exploited by governments as they make frivolous promises to pay retired voters income for life, while passing the unfunded liability that had been created by the promise to future taxpayers (some of whom hasn't been, and may never be, born).

The Paradox of Interest

Let us now see how the re-setting of the paradigm of exchanging present and future goods as the exchange of income and wealth will dispose of the modern formulation of the 'paradox of interest' as given by Kirzner¹ (op. cit. pp. 167-168).

"Much - perhaps all - will depend on the way in which the interest problem is formulated. For present purposes we adopt a modern formulation of the problem, but wish to emphasize that this formulation is very similar in spirit and character to classic formulations going back to Schumpeter and Böhm-Bawerk. The modern formulation we cite is that of Hausman. Hausman points out that 'an individual's capital ... enables that individual to earn interest. If the capital is invested in a machine, the sum of the rentals the machine earns over its lifetime is greater than the machine's cost. Why?' Common observation, that is, tells us that possession of a given stock of capital funds can, by judicious investment (say, in a machine) yield a continuous flow of income (annual rentals net of depreciation) without impairing the ability of the capital funds to serve indefinitely as a source of income. The problem is, how can this occur. Why is not the price of the machine (paid by the capitalist at the time he invests in the machine) bid up (by the competition of others eagerly seeking to capture the net surplus over cost) - to the point where no such surplus remains? We are seeking, then, an explanation for an observed phenomenon which is, in the absence of a theory of interest, unable to be accounted

¹Israel M. Kirzner, *The Pure Time Preference Theory of Interest: An Attempt at Clarification, The Meaning of Ludwig von Mises, Norwell (Mass.): Kluwer, 1993, p. 166 ff.*

for. Absent a theory of interest, no interest income ought to be forthcoming, except as a transient phenomenon; competition ought to squeeze it out of existence.”

Here is the deciphering of the paradox of interest in the light of our new paradigm. To say that the capitalist ‘invests’ his wealth is far too simplistic. The specifics of ‘investing’ are bound to confuse the issue. Moreover, the possession of wealth does not automatically guarantee access to income. There is an *exchange of wealth and income* interposed between the capitalist and the entrepreneur that ought not to be ignored. Here is what actually happens. The capitalist gives up wealth to an entrepreneur in exchange for the latter’s commitment to pay him an income at a fixed rate of interest. The entrepreneur uses the wealth to purchase capital goods (such as a machine or a fruit tree, for example), and hires a manager whose job it is to tend the capital goods, including the task of setting depreciation quotas for them in anticipation of the need to replace them at the end of their useful life without any further charge to the capitalist or to the entrepreneur. Now the entrepreneur sets up three accounts for the disposal of the yield (after depreciation) as follows: (1) the fixed interest income payable to the capitalist; (2) wages payable to the manager; (3) the remainder, or the profit, payable to himself.

In this way it is revealed that ‘investing’ implicitly involves an exchange of wealth for income. It is no longer a mystery that the sum total of interest payments exceeds the wealth subject to the exchange. If entrepreneurs were not prepared to offer the capitalist an income at positive interest for his wealth, then the latter would simply withdraw his offer to make the exchange. He could always fall back on the direct conversion of income into wealth through dishoarding. From his point of view, direct conversion would be preferable and less risky than the exchange, in the absence of incentives.

In this light the modern formulation of the interest problem and the language of ‘investing’ appears rather naive, if not outright boorish. It ignores the problem of managerial compensation, as well as that of entrepreneurial profits. These two, plus the interest income, must come out of the gross yield of capital (after depreciation). Only the entrepreneurial profit could be reduced to zero in the process of bidding for capital goods. Furthermore, in addition to the bidding of entrepreneurs for partnerships (having the effect of *diminishing* the interest income) one must also consider the bidding of managers for managerial positions (having the effect of *enhancing* the interest income). We see that the act of ‘investing’ is a complex transaction, ridden with all sorts of specifics. For this reason it is eminently justifiable that we cut through the maze of irrelevant details with our abstraction

of exchanging wealth for income. 'Investing' is far too an imprecise term to be useful in the development of a theory of interest.

Even if the owner of wealth is prepared to take the role of entrepreneur, or manager, or both, upon himself, we still have to assume that there is an underlying exchange of wealth for an income. Suppose, for the sake of argument, that a capitalist acts as his own entrepreneur and also as his own manager. In this case, to make his an efficient operation, he needs to break it down into three departments as follows: (1) the bondholding department; (2) the managerial department; and (3) the entrepreneurial department. Accordingly, he would oversee the three accounts mentioned above: the interest account, the managerial compensation account, and the entrepreneurial profit account. Never mind that the earnings from each of the three accounts will ultimately flow into his pocket. In order to have sound financial controls, the three accounts must not be blended into one, and the capitalist must assume that an exchange of wealth for an income has taken place between the bondholding and the entrepreneurial departments. Only in this way can he make sure that the fixed income is not out of line with the rate of interest prevailing in the market and that, similarly, his managerial compensation is consonant with what he could get in the competitive market. Any shortfall in gross income must therefore hit the entrepreneurial profit account first - a penalty for the poor choice of capital goods. If the profit is wiped out, then further shortfall would hit the managerial compensation account - a penalty for setting the depreciation quotas too low. In this way interest income is cushioned twice. Repairs must be made before further deterioration threatens the interest income.

A different order of priorities would make repair, indeed, economic survival, difficult if not impossible. For example, if entrepreneurial profit and managerial compensation were allowed to continue unabated while the interest income was reduced to zero, then the operation would no longer have an economic justification. The owner-manager would be better off if he took another managerial job, bought the bonds of other firms in the bond market, and forgot about his own entrepreneurship. Without such an internal accounting procedure assuming an underlying exchange of wealth for income, the capitalist would lose financial control of his enterprise. He would be in the dark. In case of a setback he would be unable to make repairs. He would be at a loss in trying to compare the efficiency of his entrepreneurship and managerial talents with those of others.

Triple-Entry Revenue Accounting

The above analysis is so important in the context of the theory of interest that I want to formulate it as an independent principle (on a par with the Principle of Double-Entry Book Keeping).

The Principle of Triple-Entry Revenue Accounting asserts that the capitalist who buys and successfully manages his own capital goods will carry three accounts in order to distribute the revenue (after depreciation) of his enterprise, namely, in order of seniority moving from the senior to the junior: the interest account; the managerial compensation account; the entrepreneurial profit account. Whereas insufficient revenues affect the junior before affecting the senior account, all surpluses accrue to the junior (profit) account.

Triple-entry revenue accounting is made necessary by the need to keep the enterprise economically healthy and to ensure that it is capable of self-correction and self-improvement. It reveals that profits cannot be understood in isolation: they have to be considered together with losses. Moreover, both accrue to the entrepreneur, without directly affecting the manager or the capitalist. This principle also highlights the logic behind the Triple Contract that I shall discuss in a later Lecture.

The Principle of Triple-Entry Revenue Accounting is also applicable to corporate governance. In this case the bond department corresponds the Office of the CFO, the managerial department to the Office of the CEO, and the entrepreneurial department to the Board of Directors of the corporation. The order of seniority can be observed in the manner the revenues are distributed among the three accounts: (1) the most senior, the interest account compensates the outside investors, the bondholders; (2) the managerial compensation account pays the salaries and bonuses of the senior managers; (3) the entrepreneurial profit account pays the compensation of the directors of the company, and the dividends of the shareholders.

In modern times we see an unfortunate shift of power away from the entrepreneurial to the managerial department. By issuing class A, class B, etc., shares (some with multiple voting rights), convertible bonds, stock options, etc., the managers have diluted the authority of the shareholders, and inappropriately usurped the power of the entrepreneurial department and its right to dispose of the surplus. The subordinate relationship whereby managers are hired and fired

by the entrepreneurial department has been compromised. Managerial power is enhanced, and entrepreneurship marginalized. This was a regrettable development indeed, and the large number of bankruptcies of corporations that we are witnessing can, in part, be attributed to the power-grab of managers at the expense of the shareholders and the directors of the company.

Chapter 3

The Janus-Face of Marketability

(Lecture Three)

Two Kinds of Marketability

It should not come as a surprise that the concept of marketability plays a central role in explaining both the origin of money and the origin of interest. The starting point of Carl Menger in studying the origin of money was the observation that the economizing individual who wants to exchange his surplus of X for Y may nevertheless exchange X for Z first, provided that Z is more easily exchangeable for Y than X , especially in large quantities. Never mind that he has no need, or he has satisfied all his needs, for Z . He will be closer to his ultimate end because Z is more salable than X . When the usefulness of a commodity for the purpose of facilitating exchange is widely recognized, more and more economizing individuals will proceed along the same lines and, finally, the commodity that is most salable (or, as we shall also say, most marketable in the large) becomes money. The connection between salability and marketability in the large becomes clear if we think of the great medieval fairs. Producers from far-away places brought their accumulated surpluses to the fair city. It was natural for them to quote their prices in terms of the commodity that was most marketable in the large, because they were hoping to buy and sell in bulk.

Following in Menger's footsteps, we choose our starting point in studying the origin of interest with a similar observation. The economizing individual who is producing surpluses of x and wants to create a store of y may nevertheless decide to

create a store of z first, provided that z is easier to exchange for y than x , especially in small quantities. Never mind that he has no direct need for z now or in the foreseeable future. He will be closer to his ultimate end because z is more hoardable than x . When the usefulness of one commodity for the purposes of hoarding and dishoarding is widely recognized, more and more economizing individuals will proceed along the same lines and, finally, the commodity that is most hoardable (or, as we shall also say, most marketable in the small) becomes money. The connection between hoardability and marketability in the small becomes clear if we think of the local craftsman who wants to save for his old age. It was natural for him to quote his prices in terms of the most marketable commodity in the small. He was adding small bits at a time to his retirement fund. And, after he started drawing on his fund, he would need to exchange small bits of it for food and other daily necessities.

Notice that the most hoardable commodity is generally not the most salable one. This is the reason why throughout the ages, up to 1870, there existed two different kinds of money circulating side-by-side. In antiquity cattle became the most salable commodity, and salt the most hoardable one. Later on these roles were taken over by others till, ultimately, the market has settled on gold as the most salable, and silver as the most hoardable commodity.

Space-Time Duality

This discussion reveals that money has a dual nature. We can also derive the duality of money from philosophical principles, notably from the duality of space and time. In every treatise on money, in one form or another, the proposition is advanced that money (whatever else it may be) is a transmitter of value through space and time. The concept of money is therefore directly linked to these two absolute categories of human thought. The dichotomy of space/time explains the dualistic nature of money, explicitly observable throughout the ages - right up to the demise of bimetallism scarcely over six scores of years ago. In its first capacity money transmits value in space, that is, over great distances with the smallest possible losses. In antiquity cattle were particularly well-suited for this purpose and have become money.

However, cattle-money was not particularly suitable for transmitting value over time with the smallest possible losses. This explains the emergence of another

kind of money, more suitable for hoarding and dishoarding, that is, to facilitate the transmission of value over time. This other kind of money was salt. Not only was it less perishable than other marketable goods; salt was also the most important agent of food preservation. In antiquity the threat of periodic food shortages loomed large, and the chief agent of food preservation was destined to assume a monetary role.

To people of the antique world it must have appeared natural that two vastly different commodities answered their money-needs, and they took the coexistence of cattle-money and salt-money for granted. Our linguistic heritage clearly reflects this fact. The English adjective *pecuniary* and noun *salary* were derived from the Latin words *pecus* (meaning cattle) and *sal* (meaning salt). Even though gold and silver which have later replaced cattle and salt were far more similar to one another, the dual nature of money persisted throughout the ages. The main reason for that was the fact that the specific value of gold was high, and parceling it out in molar quantities added substantially to the cost of production. Only towards the end of the 19th century did advances in metallurgy make it possible that one single monetary metal, gold, could answer both monetary needs of man better than any other commodity. I refer to the development that has made it possible to produce or to recover gold in molar quantities at a cost competitive to the cost of producing the same value represented by silver (for which molar processes were not needed, thanks to the lower specific value of the silky metal). The practical outcome of this development was the recognition that the best monetary system was gold monometallism. As Bruno Moll put it in his book *La Moneda*, “gold is that form of possession which is of the highest elevation above time and space”.

The Subjective Theory of Value

The dualism of the monetary system is the starting point of my investigations as I explore the two sources of man's need for money. The first, man's need to transfer value over space, was put by Carl Menger in the center of his subjective theory of value. The second, man's need to transfer value over time (or, as I shall more specifically describe it, man's need to convert income into wealth and wealth into income) is at the center of my 'subjective theory of interest'. This is the preferred name we shall apply to the new theory of interest to be developed in this course here at Gold Standard University. In developing his subjective theory

of value Menger described the origin of money in terms of the evolution of the marketability of goods. The unit of value could be chosen only after the most salable commodity, gold, had been established as the monetary metal. Out of this monetary metal the unit of value, the standard gold coin, could be made.

But marketability, like the ancient Italian god Janus (in whose honor the first month of the year has been named) has two faces: marketability in the large (salability), and marketability in the small (hoardability). The former is synonymous with Menger's term *Absatzfähigkeit* which he has made the corner stone of the subjective theory of value. Hoardability has not been isolated before as a scientific concept. Ours is the first attempt to analyze its role in the conversion of income into wealth and wealth into income, so that it may become the corner stone of the subjective theory of interest.

Marketability in the Large or Salability

Menger observed that the market quotes not one but two prices: a higher ask price and a lower bid price (understood as unit prices). He placed the bid/asked spread, the difference between the two, right in the center of his analysis. We follow his insight and observe that as ever larger quantities of a commodity are offered for sale, the bid/asked spread widens. The market-maker takes a greater risk in buying or selling unusually large amounts. To work off a greatly expanded inventory, or to replenish a greatly reduced one, is time-consuming. In the meantime the price could change unfavorably for him. The market-maker compensates for his risks by quoting a wider spread. The behavior of the bid/asked spread is fundamental for the determination of salability.

A commodity X is said to be *more marketable in the large, or more salable* than another Y if the bid/asked spread for X increases more slowly than that for Y , as ever larger quantities of X and Y are offered for sale in the market. For example, perishable or seasonal goods have a lower, while durable goods or goods for all seasons a higher, degree of salability. It is easy to see how cattle have become the most salable good in antiquity. People had superb confidence that there could never develop a glut in the cattle market. Long before such a turn of events owners would drive their herds of cattle to regions where a shortage prevailed or, at least, there was no glut. The cost of transporting a given value represented in the form of cattle was lower than the cost of transporting the same value represented by

anything else, due to the mobility of cattle. This fact is also preserved in our linguistic heritage. A herd is also known as a *drove* of cattle and the herdsman as the *drover* (both are derived from the verb to *drive*). Thus mobility or, better still, portability is an important aspect of salability. The more portable a commodity, the more easily it can seek out havens where it is in the greatest demand.

The term salability refers to the quality whereby a good is capable of being bought or sold in the largest quantities with the smallest possible losses - explaining how this quality earns its name. Among the most salable goods we find the precious stones and metals. A long historical process has promoted gold to become the most salable of all goods. For gold, the bid/asked spread is virtually independent of the quantity for which it is quoted. As we have seen, for non-monetary commodities different spreads are quoted for different quantities, and the larger the quantity the larger is the spread. For gold the spread only depends on the cost of shipping it to the nearest gold center. Under a gold standard the bid/asked spread is actually constant and is equal to the difference between the higher and lower gold points. (The lower gold point is that price at which it becomes profitable to melt down domestic gold coins in order to export the bullion; the higher gold point is that price at which it becomes profitable to import the bullion in order to have it coined at the domestic Mint.)

The gold standard is seen as the result of a market process in search of the most salable commodity. Some authors deliberately confuse the issue insisting that the constant spread for gold is due to institutional factors such as the statutory requirement that the central bank stand ready to buy or sell unlimited quantities of the metal, namely, buy at the lower and sell at the upper gold point. But this argument is putting the cart before the horse. Institutional constraints would sooner or later break down if another metal with less than perfect salability were substituted for gold as the monetary metal - as indeed happened to silver in the 19th century, to copper in medieval times, and to iron in antiquity.

The Subjective Theory of Interest

We have studied the first source of man's need for money: his need to transfer value over space. The second source, man's need to transfer value over time or, as we have more specifically described it, his need to convert income into wealth and wealth into income, is at the center of the subjective theory of interest. The

duality between the subjective theory of value and the subjective theory of interest is remarkable. The two are related through monetary duality that has prevailed through millennia.

It is common knowledge that, although precious stones have a high degree of marketability in the large, their marketability in the small is poor. The process of cutting up a large stone into a number of smaller pieces often results in a permanent loss of value. This is an example of the paradox that the value of a parcel may actually be greater than the value of its component parts. Even for precious metals, whose subdivision into smaller parts is fully reversible, marketability in the small cannot be taken for granted. A penetrating example due to a 19th century traveler is cited by Menger¹.

“When a person goes to the market in Burma, he must take along a piece of silver, a hammer, a chisel, a balance, and the necessary weights. ‘How much are those pots?’ he asks. ‘Show me your money’, answers the merchant and, after inspecting it, he quotes a price at this or that weight. The buyer then asks the merchant for a small anvil and belabors his piece of silver with his hammer until he thinks he has found the correct weight. Then he weighs it on his own balance, since that of the merchant is not to be trusted, and adds or takes away silver until the weight is right. Of course, a good deal of silver is lost in the process as chips fall to the ground. Therefore the buyer prefers not to buy the exact quantity he desires, but one equivalent to the piece of silver he has just broken off.” (Op. cit., p. 281.)

I have in my possession the remnants of a heavy gold chain that had once held the pocket-watch of my grandfather. The watch itself was bartered away for food by my mother during hard times before I was born. But I remember very vividly the delicate hands of the dentist as he was clipping off an agreed weight from the chain with his fine pair of clippers in the year 1945. He would not take paper currency in exchange for doing dental work. Instead, his clippers went a long way to help my mother to discharge our debt. Examples such as these justify the isolation of the concept of hoardability as the corner stone of the subjective theory of interest. The buyer of pots in Burma, and my mother in Hungary, were converting wealth into income. They must have been painfully aware of losses due to chips of the precious metal falling to the ground.

¹Carl Menger, *Principles of Economics*, New York: N.Y.U Press, 1981 (originally published in German in 1871 under the title *Grundsätze der Volkswirtschaftslehre*)

Marketability in the Small or Hoardability

The precious metals are more hoardable than precious stones, as the losses involved in parceling them out into ever smaller pieces are smaller. It is this common-sense experience that we want to generalize. Our first observation is that, as ever smaller quantities of a commodity are offered for sale, the bid/asked spread widens. A wider spread compensates the market-maker for the lack of incentives to deal in unusually small quantities. The bid/asked spread is of fundamental importance for the determination of hoardability as well.

A commodity x is more marketable in the small, or more hoardable than another y if the bid/asked spread for x increases more slowly than that for y , as ever smaller quantities of x and y are offered for sale in the market. For example, non-perishable foodstuff such as grains are more hoardable than perishable ones. Horse meat is more hoardable than live horses. It is easy to see how salt has become the most hoardable commodity in antiquity. People were confident that disturbing surpluses of non-perishable foodstuff would not develop. Everybody who could afford it would be happy to hoard them. They realized that seven lean years would soon follow the seven fat ones. For the stronger reason, people were superbly confident that their hoard of salt, this foremost agent of food-preservation before the age of refrigeration would not lose its value, come rain or shine. Value could not be transferred over time with smaller losses than through the stratagem of hoarding salt. Other examples of highly hoardable commodities are: grain, tobacco, sugar, spirits, silver. It is interesting to note the heavy government involvement, at one time or another, with the production or trade of all these.

The term hoardability refers to the quality whereby a good is allowed to be bought or sold in the smallest quantity with the smallest possible losses - explaining how this quality earns its name. It is this property that matters most when the economizing individual is trying to convert income into wealth or wealth into income. It is this property that is most crucial for him in solving the problem of transferring value over time most efficiently. He will succeed best if he employs the most hoardable commodity.

The Rise and Fall of Bimetallism

An historical process similar to the one making gold the most salable has promoted silver to become the most hoardable commodity. Gold was the money used to pay princely ransoms and to buy vast territories such as Louisiana and Alaska. Silver, by contrast, was the money used by people of small means to buy food, or to accumulate capital (*cf.* the silver penny and Maundy money of England). As long as the necessary technology was lacking, gold could not challenge silver's position as the most hoardable commodity. The cost of producing or verifying a small fraction of the unit of value as represented by gold could involve expensive molar processes. As I have already observed, the same small fraction of the unit of value represented by silver incurred no such extra cost: the amounts involved were no longer molar, due to the lower specific weight of silver.

This explains the rise of bimetallism under which the dual monetary system that has prevailed since time immemorial assumed a highly symmetric form. The most salable commodity, gold, and the most hoardable, silver, have become monetary metals spontaneously through the market process. Gold and silver coins continued to circulate side-by-side for millennia. As long as governments adhered to a "hands off" policy, the dual monetary system was highly successful. In the end it was government meddling, in trying to enforce a rigid exchange ratio for the monetary metals, that brought the system down. For thousands of years the bimetallic ratio has been remarkably stable, in fact, more stable than any other economic indicator. It was not constant, however. There was a secular trend making gold relatively more valuable with the passing of time, as the bimetallic ratio was slowly rising from 10 in antiquity to about 15 at the beginning of the Modern Age. Paradoxically, the reason for the secular rise in the bimetallic ratio was the fact that gold has become more widely available for monetary uses, partly through the violent dispersal of ancient hoards (e.g., the rape of Persian gold by Alexander the Great, and the rape of the gold of the Inca by Pizarro), and partly through increasing output from the gold mines. However, it is important to note that the volatility of the bimetallic ratio has been so small that it has never provided speculators with an opportunity to make a profit. The wild orgy of speculation in precious metals, making windfall profits available, first started with the fixing of the bimetallic ratio which has destabilized the dual monetary system.

In fixing the official bimetallic ratio governments were led by greed. They thought that they could make their vast hoards of silver more valuable by stopping

the slide in the relative value of the silky metal. It is not in the power of earthly governments, however powerful economically and militarily, to create value at will. Unfortunately, this simple lesson has not been learned even today, as governments are engaged in a mad race to flood the world with their own irredeemable currency before others could do it with theirs.

The measure to fix the official bimetallic ratio backfired. It signaled to people that time has come to switch from silver-hoarding to gold-hoarding. In response, people started dumping silver at the door of the Treasury while depleting its gold hoards. Governments solemnly declared that they would defend their official bimetallic ratio through thick and thin. However, eventually, they had to eat their words. Once more, the market proved to be stronger than governments. They were forced to replace bimetallism with gold monometallism. As the history of bimetallism is widely misunderstood and even misrepresented, I plan to return to it in a later Lecture to set the record straight.

The Paper Boy and His Silver Dime

The mechanism of direct conversion of income into wealth worked as follows. A wage earner aspiring to become his own boss would, on every payday, put aside a silver dime or two not just for a rainy day but, more importantly, for the day when he would quit the labor force and become a businessman. Silver dimes were the agent of capital accumulation. Financial annals tell us about success stories such as that of the shoeshine boy setting up shop at the main entrance of the department store that he would eventually buy out. His secret was the silver dime which he could hoard with confidence. Some countries, especially poor ones, had even smaller silver coins in circulation, e.g., the half-dime of Newfoundland. Mr. Warren Buffett started his own fortune, reportedly among the greatest in the world today, as a paper boy in the streets of Washington, D.C. where his father the Hon. Howard Buffett served as a member of the U.S. House of Representatives from Nebraska. It is an interesting question to ask why paper boys are no longer on track to become multi-billionaires. Could it have something to do with the government's denying the silver dime to people? Ask Mr. Buffett whether he thinks that paper boys still had a chance of ending up as the owner of the newspaper empire whose papers they used to sell on the streets, by hoarding the 'clad' dimes of today?

The Fullarton Effect

By far the most important example of gold hoarding in the modern world is furnished by the so-called Fullarton effect. This important topic I shall study in full details in a future course, Monetary Economics 202: *The Advanced Theory of Interest - The Bond Market and the Formation of the Rate of Interest*. John Fullarton of England published a book in 1844 entitled *On the Regulation of Currencies* in which he described the reaction of bondholders to a falling interest-rate structure. They would certainly not let the rate of interest fall through the floor. They would take profits in selling their overpriced bonds, and put the proceeds into gold, until bond prices have come back to earth once more. I shall refer to this market action as the gold/bond arbitrage of the marginal bondholder. He is guided by time preference. (Together with the productivity of capital, time preference is one of the regulators of the rate of interest, as we shall see in full details later.) It is important to understand that the sale of the bond is not in itself sufficient to bring about the desired effect: a reversal of the fall in the market rate of interest. For that it is necessary that the proceeds of the sale be held in the form of gold. The Fullarton effect depicts gold hoarding as a protest vote against interest rates being pushed down to unreasonably low levels through institutional means by the banks or by the government. Holding gold as opposed to holding a promise to pay gold is absolutely essential, to make the protest effective.

Mises on Gold Hoarding

Ludwig von Mises² ridiculed gold hoarding calling it “the regular *deus ex machina*” in Fullarton’s work (see *Theory of Money and Credit*, p. 169). Mises maintained that secure and mature claims to gold money are complete substitutes for it and, as such, are able to fulfill *all* the functions of money in those markets in which their maturity and security are recognized. Mises has committed a great error in refusing to accept the fact that the gold coin, but no claims to it, is the indispensable agent of the marginal bondholder to validate his time preference. We may assume that the maturity and security of circulating claims to gold coins are fully recognized in the bond market. Even so, felt uneasiness on the part of the

²Ludwig von Mises, *The Theory of Money and Credit*, Indianapolis (Liberty Classics) 1981.

marginal bondholder caused by the abnormally low rate of interest (the flip-side of which is the abnormally high bond price) will not be assuaged if he exchanges the bond for another piece of paper. However mature and secure a claim may be, he wants to hold the metal (a present good), and not a mere claim to it (a future good). His ultimate end is to raise the rate of interest to the level of his time preference. It would be counter-productive (not to say foolish) to exchange the bond for bank notes. Such an exchange would mean extending credit at zero interest while forgoing the positive interest on the bond he had sold. By contrast, holding the gold coin does not involve *extending* credit - in fact it is the only way of *denying* it! The gold coin must be seen as the indispensable agent of the marginal bondholder in asserting his marginal time preference. No fiduciary media can ever be a substitute for the gold coin in this capacity. Time preference would be little more than a pious wish if it was not for the cutting edge of the gold coin which alone could validate it. In fact, time preference lacks any concrete meaning outside of the arbitrage-nexus between the bond and gold markets.

Mises categorically states that the bank note is just as much a present good as the gold coin. "A person who accepts and holds bank notes grants no credit - he exchanges no present good for a future good ... A bank note is a present good just as much as gold money." (*Op. cit.*, pp. 304-305.) I must part company with Mises over this point. The issue whether a bank note is a present or a future good goes right to the heart of the theory of interest. My view is that *holders of bank notes or gold certificates are (voluntary or involuntary) grantors of credit, furthermore, their greater or lesser willingness to continue to hold the paper is an important component of the force determining the rate of interest.* The only way for the individual to deny credit to the banking system is to divest himself of his holdings of bank notes and deposits in excess of his indebtedness. If we admitted that a bank note were a present good, then we would also have to admit that Keynes was right after all in suggesting that governments have the power to create wealth out of nothing, simply by sprinkling some ink on little scraps of paper. Gold hoards are far from being a *deus ex machina*. They are, rather, a sharp tool of human action by means of which the marginal bondholder can validate his time preference under a gold standard. They are the very mechanism through which savers exercise their franchise to regulate the rate of interest. It was precisely for this reason that governments first sabotaged and, finally, destroyed the gold standard. They wanted to disenfranchise the savers.

The culmination of these courses here at Gold Standard University will be a demonstration of my thesis that *the apparent success of governments to disenfranchise savers and to usurp their prerogative to regulate the rate of interest will ultimately turn out to be a failure, and may even be the cause of an unprecedented economic catastrophe. Savers, frustrated, turn en masse from gold hoarding to marginal hoarding, that is, the hoarding of other highly hoardable commodities, with disastrous consequences. The Brave New World of synthetic credit, manufactured out of inextinguishable debt, is unworkable. While gold hoarding is self-limiting, marginal hoarding is not. It destabilizes the system of production and distribution and generates a long-wave cycle, also known as the Kondratyeff cycle, complete with ruinous deflations and depressions alternating with ruinous inflations, ultimately self-destructing in a crack-up boom.*

A Forgotten Anniversary

Other economists have also condemned gold hoarding. John Maynard Keynes said that he was prepared to pass the pathology of gold hoarding along to the psychiatrist for examination “with a shudder”. Politicians were jubilant in welcoming this verdict. Seventy years ago, in 1933 during one of his fire-side chats F. D. Roosevelt declared that he wanted to put an end to the “senseless practice” of shuttling gold back and forth between the banks and individual depositors. What he did not say was that he was going to rob *both*. He appealed to the people to yield control over gold *temporarily* to the government so that it may restore confidence in the monetary system. People responded, and surrendered their gold out of patriotic zeal. No sooner had Roosevelt plundered the gold belonging to the banks and their depositors than he wrote up the value of the loot. There was no more talk about the temporary nature of the measure. Today, 70 years after the event, there is still no talk about guilt or reparation. The bad faith in this particular chicanery cries to heaven for justice.

Chapter 4

The Principle of Capitalization of Incomes

(Lecture Four)

Optimizing Provision for Deferred Consumption

We have seen that whenever provision for deferred consumption is made, it is done through converting income into wealth as the initial step, later to be followed by the conversion of wealth back into income as the concluding step. The question of optimizing the conversion arises naturally. In the last Lecture we discussed how the selection of the most hoardable good provides an answer to the problem of optimization on condition that we are confined to direct conversion, that is, hoarding and dishoarding. However, further optimization will be possible as soon as indirect conversion becomes available to augment direct conversion. Recall that indirect conversion means the *exchange* of income and wealth. It appears when the prohibition on such exchanges has been removed, making hoarding and dishoarding obsolete. Indirect conversion is the irreducible form of credit that represents a leap in efficiency over direct conversion. The party giving up present wealth in exchange for future income is the supplier of credit. Interest is seen as the measure in the increase of efficiency of conversion due to the appearance of credit, zero interest meaning direct conversion.

As history and logic suggests, income is primary and wealth is derived. This recognition was codified by the American economist Frank Fetter¹ as the *Principle of Capitalizing Incomes*. It states that *the value of wealth is due to the possibility of*

¹Frank A. Fetter, *The Principles of Economics*, New York, 1905.

converting it into income (deriving an income from it). Thus income is the source from which the value of wealth flows. The capitalization of comparatively safe permanent incomes contains within itself all the factors for the independent determination of the rate of interest.

Teleology versus Causality

The merit of the Principle of Capitalizing Incomes is that it puts the phenomenon of interest into its proper context. Without it the mistaken belief may take hold that wealth is primary and income is derived. Income is obtained by putting wealth out at interest. But how is wealth obtained? This is a question that cannot be side-stepped, and it is not a chicken-and-egg problem either. Wealth is obtained by capitalizing incomes.

The theory of interest holds a very special place in the history of human thought. Since the time of Aristotle the practice of charging and paying interest on wealth put out in loans has been stigmatized and, in many cases, criminalized. Even though the Reformation put an end to the latter, much of the stigma has remained and continues to be the source of anti-capitalistic agitation. Aristotle's mistake in ruling that taking and paying interest is against natural law (*pecunia pecuniam parare non potest*) was that he looked for the *causes* of interest - finding none. Instead, he should have looked for ends that interest might serve - in which case he could have found the Principle of Capitalizing Incomes. Here we have a most important means of wealth-creation: people with little or no wealth can get it by capitalizing (part of) their income. Indeed, ever since interest was decriminalized, the accumulation of productive capital has accelerated beyond belief, along with the proliferation of inventions finding industrial (not to mention therapeutical and recreational) applications.

Thus the Principle of Capitalization of Incomes exposes the teleological nature of interest. The sources of interest cannot be determined on the grounds of causality. Nor can interest be stamped out of existence by secular or canonical authorities as it is the result of purposive action, being inextricably involved with the conversion of income into wealth and wealth into income by economizing individuals, for whom it is indispensable for survival. Proscriptions against interest may eliminate the exchange, but never the conversion. The economizing individual may simply bypass the exchange and fall back on atavistic forms of conversion: hoarding and

dishoarding. However, society would pay a high price for such wrong-headed policies. Wealth-creation would suffer a setback. Industrious and frugal people would be prevented from accumulating capital. Efficiency would be sacrificed, and society penalized for the sake of “ideological purity”.

The right approach to understanding the phenomenon of interest recognizes its teleological nature. It does not attempt to explain the nature and sources of interest on the grounds of causality. As Carl Menger has emphatically pointed out, all voluntary exchanges, such as that of goods for goods, or goods for services, are based on the mutual advantage of the parties. The exchange of income and wealth is no exception. Here, too, either party gets something it wants more in exchange for something it wants less. The Principle of Capitalization of Incomes was originally stated by the American economist Frank A. Fetter in his *Principles of Economics*.

There are two ways of looking at lending \$1,000 for ten years at 5% annual interest, although only one of the two, the loan, is normally recognized, in spite of the fact that the other is the more revealing. Thus the man who borrowed \$1,000 for ten years at 5% annual interest has, at that price, sold an income of \$50 *per annum* for a period of ten years. At the end of that period he has the right and obligation to repurchase the same income at the same price. It is clear that both the lender and the borrower are better off with the exchange than without. Typically, the seller of the income is a younger man, while the purchaser is older. The former is well able to generate the surplus income he has sold through physical or mental exertion. With the proceeds of the sale he will buy the necessary capital goods he needs in his enterprise to increase the efficiency of production. The latter, the buyer of the income, could hardly put his wealth to a better use than making a loan in order to augment his income. “He cannot take it with him”, as the saying goes. He is no longer able to augment his income through increasing his physical or mental exertion. The reason for his accumulating wealth earlier was precisely the recognition that time would come when his surplus of physical and mental energy would give way to a deficit. These are his “harvest years”, and the facility of exchanging wealth for income is his tool of harvesting. The Principle of Capitalization of Incomes recognizes the division of labor between successive generations. It is based on cooperation that is perfectly voluntary, quite unlike the coercive “social security system” sponsored by the government, whereby a shrinking number of younger workers are coerced into supporting one older retiree, while the population of retirees is exploding. These considerations

were lost in the heated debates about usury and other aspects of the nature and sources of interest, not to mention the debates about the merits and demerits of governmentally enforced “old age security”. It is time to recognize that voluntary division of labor has always been at the source of any act of exchange, including exchanging income and wealth.

No Usury Is Involved in the Exchange of Wealth and Income

Contrary to the bad press it has been receiving in this age of “scientific culture”, scholastic philosophy was way ahead of contemporary thought and, in many respects, it is also ahead of ours. An outstanding example is scholastic thought on the subject of interest and on the question of usury. The scholastic fathers were careful to distinguish between usurious interest charged on personal loans and on ‘dry exchanges’ on the one hand, and interest involved in the exchange of income and wealth on the other. They did not consider the latter usurious. The issue came to a head at the Council of Constance in 1414 that upheld the position of the schoolmen that *the purchase and sale of rent-charges and annuity contracts involved no usury*. Apparently, this decision did not satisfy the more dogmatically inclined (not to say economically more backward) segments of the Church. They raised the question again in Rome some ten years later. In 1425 Pope Martin confirmed the earlier decision made by the Council, thereby conclusively ending the debate.

Scholastic philosophy was on solid grounds with regard to its stand on the narrowing the definition of usury to exclude interest on the exchange of income and wealth. According to the Jesuit economist Istvan Muzsly, Thomas of Aquinas (1225-1274) determined that a modest interest (in our terminology, discount) was justifiable on short-term commercial credit as a risk-premium (*damnum emergens*), as well as compensation for lost income (*lucrum cessans*). We shall return to this point in a future course on the bill of exchange.

The Triple Contract

In Lecture 2 I have examined “rent charge” as an important historical example of the exchange of income and wealth. A second example is the Triple Contract or *contractus trinus* that was popular in the Middle Ages and in the Renaissance. As its name indicates, it was a combination of three contracts in one as follows: (1) a partnership contract between the ‘lender’ and ‘borrower’ sharing the profit or loss in the borrower’s business, (2) an insurance contract through which the borrower promised the lender compensation for any possible loss in the business, and (3) another insurance contract through which the borrower guaranteed the restitution of his share of the capital to the lender after a stated number of years, regardless of the fortunes of the enterprise, provided that the lender gave up his claim to the full share of profits. It can be readily seen that the triple contract rationalized interest as an insurance premium. Economically, capital stock in the enterprise has been legally converted into a bond paying interest to the owner of the bond at a fixed rate.

This construction is most revealing. It exposes the point of contact between the marginal productivity of capital and pure interest. It reveals that every investment is an exchange of wealth for income. It also reveals the character of pure entrepreneurial profit as an insurance premium that the entrepreneur must collect in order that his business may survive the vicissitudes of an uncertain economy. Comparing the triple contract to triple-entry accounting (mentioned in Lecture 2) we see that the lender is the capitalist and the borrower is the entrepreneur. It does not matter whether a manager is hired, or whether the entrepreneur acts as his own manager. The substance of the contract is the underlying exchange of wealth and income. The triple contract was also considered as an admissible use of credit that escaped proscription on grounds of the usury laws. The problem of exchanging wealth and income, and its relevance to the problem of interest, has also been treated by the British economist Philip Wicksteed².

²Philip H. Wicksteed, *The Common Sense of Political Economy*, vol. I, London: Routledge & Keagan Paul, 1933 (originally published in 1910).

Turning Stone into Bread and Water into Wine?

As discussed above, the point of departure in this study of the phenomenon of interest is the recognition that an inexorable need exists, second only to the need for food and shelter, urging the economizing individual to convert income into wealth in order that later, when past his prime, he may convert his wealth back into income. For him, income is an ultimate end, insofar as without it he may have no other ends in this “valley of tears”. Since wealth is an indispensable means to that end in the twilight years of his life, his need for conversion is beyond doubt. The theory of private property ought to take full account of the fact that the conversion of income into wealth is the rational and characteristically human manifestation of the law of the biosphere where all living things can only survive by hoarding their substance in one form or another. In case of the economizing individual this substance, as we have just seen, is the “most hoardable” commodity, gold, which is in demand even as it is offered in the smallest practically realizable quantities, and can be traded with the smallest possible exchange losses.

In passing we may touch upon a paradox that utilitarian philosophy has failed to solve. An apparent contradiction exists between the needs of the individual and society. There is a time in the life of every individual when he needs to draw on his savings accumulated earlier. Yet dishoarding (no less than hoarding) is being looked at with disapprobation, as an anti-social activity. It is unsettling as it allegedly affects supply unfavorably, possibly at a time considered inopportune from the point of view of society. (By the same token, hoarding allegedly affects demand unfavorably.) The utilitarian philosophers could not clarify how the market provides for the conflicting demands of society and its ageing members. Utilitarian philosophy has failed to solve the problem of hoarding and dishoarding. In particular, it has failed to explode the arguments of Silvio Gesell, John Maynard Keynes, and other inflationists, according to which the contractionist and deflationary pressures inherent in a metallic monetary system can be the source of poverty and chronic economic distress. In particular, the gold standard admits hoarding of the monetary metal which, according to inflationist doctrine, is deflationary and the chief cause of depression. At the same time these authors talk about the inflationist paradise, where the miracle of “turning stone into bread and water into wine” would be routinely performed by monetary technicians in the service of governments.

I refute the inflationist argument in the spirit of utilitarian philosophy, removing an obstacle that had for a hundred years blocked the advancement of monetary science, as follows. One must distinguish between two kinds of dishoarding. It is the dishoarding of marketable goods other than gold that is deflationary. Dishoarding gold does, on the contrary, ease the (real or imagined) shortage of purchasing media. To the extent gold is hoarded occasionally, it is offset by occasional dishoarding. The gold standard is far from being contractionist as asserted by the inflationists. Quite to the contrary: gold is the chief prophylactic that protects the economy against deflation. When the banks or the government sabotage the gold standard, they spawn a cycle known as the Kondratieff long-wave cycle. The hoarding instincts of the people are channeled away from gold, a natural conduit (as gold is not essential for human consumption), to other marketable goods, an unnatural conduit and a dangerous agent when hoarded (as they could be indispensable for human consumption). The cycle manifests itself through the destabilization of the price structure as hoarding (dishoarding) marketable commodities results in rising (falling) prices. The cycle of high and low prices gives rise to a resonating cycle of high and low interest rates, as further analysis shows. The Kondratieff long-wave cycle consists of inflation alternating with deflation. Resonance ultimately causes a “runaway vibrator” effect that is capable of destructing the economy.

Inflationary and Deflationary Spirals

I define an inflationary spiral as the phenomenon of a rising price level causing people to hoard marketable goods which, in turn, causes further price rises forcing a repetition of the process. The definition of a deflationary spiral is analogous. It is a statistical fact, first observed by the Soviet economist N.D. Kondratieff (1892-1930) that, for the past two hundred years or so, inflationary and deflationary spirals have alternated, each lasting for a period of 25-35 years. I shall discuss the Kondratieff long-wave cycle in greater details later in these Lectures.

The most ominous consequence of the deliberate destruction of the gold standard is that the Kondratieff long-wave cycle is getting out of hand, becoming a runaway vibrator and threatening the world economy with a depression more devastating than any previously experienced. When gold is banned, people will not refrain from hoarding. On the contrary, their attention will forcibly be focused on the urgency of hoarding as they fully expect prices to rise in the wake of the government and

the banks defaulting on their gold obligations. This triggers an inflationary spiral that must come to a violent end when prices over-react and threaten the value of hoarded goods with an imminent collapse of prices (in other words, the principle of declining marginal utility finally asserts itself). At that point hoarding gives way to dishoarding, and a deflationary spiral is triggered. As prices fall, more dishoarding occurs since owners of hoarded goods scramble to cut their losses. Producers go bankrupt in droves, and unemployment soars.

Many a book has been written on the *microeconomic* damage that the destruction of the gold standard by government sabotage has caused (such as damage to savings, capital accumulation and maintenance). Yet authors have not given sufficient attention to the *macroeconomic* damage for which the destruction of the gold standard is also responsible, such as the deflationary spiral, bankruptcies, debt repudiation on a massive scale, falling production, and growing unemployment. Paradoxically, the gold standard is blamed for causing depressions when, in fact, the *sabotaging* of the gold standard is the culprit.

At the present juncture the world economy is threatened by a treacherous deflationary spiral that could end in the worst depression ever. It is not possible to understand this development without realizing that the removal of the gold standard has destabilized the interest rate structure and, hard on the heels of the Japanese, American interest rates are inexorably plunging to zero. Falling interest rates decimate the balance sheet of the producers, forcing many into bankruptcy. Later in these Lectures I shall give a more detailed analysis of this hidden process in terms of failure in accounting practice. For the time being I confine myself to reiterating that the disaster is a direct, although much delayed, consequence of the deliberate destruction of the gold standard some thirty years ago.

Double-entry Book-keeping

The invention of double-entry book-keeping in Italy of the *Trecento* was a momentous landmark in economic history. Göthe called it “one of the finest produced by the human mind” in his Wilhelm Meister’s *Apprenticeship*. Double-entry book-keeping is of utmost economic importance second only to the much earlier appearance of indirect exchange, making direct exchange (better known as barter) obsolete. The new invention has made *indirect accumulation of capital* via the instrument of contract possible, thus making *direct accumulation of capital*

via hoarding obsolete. Previously, there was only one way for the economizing individual to convert income into wealth outside of family bonds: hoarding (for much of the Orient, which was slower in developing the institutional framework to protect contractual rights, it is still the only way). This immobilized large amounts of gold, and made capital accumulation an arduous and protracted process, in which reward was far removed from effort, dampening incentive.

The invention of double-entry book-keeping made possible a heretofore unprecedented increase in the efficiency of gold as catalyst for capital accumulation. Gold's physical presence was no longer necessary in every conversion. From then on gold could work by proxy as its role in the conversion has become residual. Thanks to the breakthrough, partnerships could now be formed representing exchange of income (of the junior partner) for wealth (of the senior). Later, with the gradual acceptance of "sleeping partners" in the firm, the formation of a joint-stock company has become possible. Shares in the joint-stock company could be traded as fixed-income securities (see the triple contract above). Indeed, this they were in all but name, in order to avoid censure by canonical and secular authorities under the usury laws. It is clear that without double-entry book-keeping a departing partner could not be bought out, nor would balance-sheets, income statements, and stock markets, have been possible. There would be no precise and objective way of attaching value to the assets and liabilities of a firm, short of liquidation.

Oriental Hoarding - Occidental Dishoarding

The new development released huge amounts of gold from private hoards as people began to accumulate and carry wealth in the form of securities disguised as partnership equity, instead of gold. By contrast in the Orient, where the social and institutional arrangements were far more inimical to the individual and his freedom to choose, the demand for gold and silver for hoarding purposes continued unabated. During the *Quattrocento* gold disgorged by the Occident flowed to the Orient in payment for exotic goods. Spices, silk, and satin enjoyed exceptional marketability in the Occident where all great banking houses engaged in financing this lucrative trade. The world was treated to a curious spectacle. The Occident was thriving while trading its gold with the Orient for frankincense and myrrh - as it could use more of the latter, and it had learned to get by with less of the former.

It was this migration of gold from West to East that gave the edge of industrial power to the Occident, an advantage it still has over the Orient.

This shows that gold is merely the whipping boy at the hand of the inflationists. Gold is not scarce, though it quickly goes into hiding the moment the government and the banks conspire to tamper with credit. There is no conflict between the welfare of society and that of its ageing members. Very little if any gold is needed to complete all the exchanges of income and wealth in the course of normal business, provided that the government does not interfere with the free choices of individuals and the banks do not engage in borrowing short to lend long. Only when such interference by the government and illicit arbitrage by the banks take place does the demand for gold become sizeable. The correct policy for the government is “hands off” - to let the market decide what is best for its participants, and to blow the whistle when banks are caught red-handed indulging in illicit interest arbitrage.

Interest and the Reformation

The next advance came with the Reformation, during which canonical and secular strictures on interest were eased, the definition of usury narrowed and, later, the prohibition against both repealed. Whereas the partnership contract had originally been designed with the concealment of interest in mind, now it became possible, for the first time in history, to engage openly in the exchange of income and wealth with the rate of interest freely quoted. The bond market was born as a result of these historic changes. The right to income reserved by the bondholder could now enjoy the same legal protection as the right to rent-charges (discussed in Lecture 2) enjoyed during the prohibition era. Thus it remained for the Reformation to crown the great economic advances of the Renaissance, and to free the exchange of income and wealth from its former fetters. For the first time in history the rate of interest could manifest itself as a market phenomenon.

Chapter 5

The Pentagonal Model of Capital Markets

(Lecture Five)

Squaring the Diagonal

The formation of the rate of interest is usually explained in terms of a diagonal model of the capital market between the supplier and the user of “loanable fund”. The rate of interest is the equilibrium rate at which the market clears supply and demand. This model is woefully inadequate as it blots out the time element and the crucial process of capital formation. To remedy this my analysis will, in the first approximation, replace the diagonal model with what I figuratively call “the square model of the capital market” having four participants: the annuitand, the annuitant, the entrepreneur, and the inventor. This will grant us a more penetrating insight into the process of capital formation in terms of capitalizing incomes.

In considering the problem of exchanging income and wealth we may isolate two fundamental needs: (1) the annuitand’s need to convert income into wealth, and (2) the annuitant’s need to convert wealth into income. Typically, the annuitand is a younger man who is looking forward to getting married and starting a family. He tries to provide for the future needs of his family: for the education of his children, for emergencies caused by ill health, as well as for his and his wife’s old age. By contrast, the annuitant is an older man in his harvest years, looking forward to his twilight years with equanimity. He has by now accumulated the wealth that he is ready to convert into a suitable income. If the annuitand (annuitant) is restricted to *direct* conversion due to institutional restraints on the exchange of income and

wealth, then the optimum conversion is furnished by gold hoarding (dishoarding). By the definition of marketability in the small, no further improvement is possible. However, if the institutional restraints are removed, then a whole new game will come into play and, indeed, further improvements in the conversion are possible for the benefit of all.

The Entrepreneur and the Inventor

On the one hand, the annuitant's need is answered directly by the entrepreneur who is anxious to give up income in exchange for wealth. He can profitably invest wealth in productive enterprise that will provide him with a larger income that he can easily share with his partner, the annuitant. On the other hand, the annuitant's need is answered directly by the inventor anxious to give up future wealth in exchange for income. He is working on a new production tool or process that may take several years to perfect before it can be put in place. In the meantime he has to sustain himself and to defray the cost of his research and development (R&D). The new tool or process he is perfecting represents future wealth that he can easily share with his partner, the annuitant, who provides for him the necessary income in the interim.

The four participants: the annuitant, entrepreneur, inventor and their exchanges make up the square model of the capital market. Both the entrepreneur and inventor engage in the business of capital formation; the difference is seen in the method of amortization. The capital formed by the entrepreneur is scheduled to begin its amortization cycle immediately. There is a prolonged waiting period before the capital formed by the inventor can start its amortization cycle. The invention introduces higher order production goods. The deployment of these is what Böhm-Bawerk called "more roundabout processes of production". The R&D capital accumulated by the partnership of the annuitant and the inventor is the most critical indicator of the future shape and health of the economy. In the final analysis this is what makes the difference between a progressive and a retrogressive economic system.

On the Causes of Chronic Unemployment

The presence of chronic unemployment in the economy indicates that the annuitant and the inventor are hampered by social and institutional arrangements in their effort to form R&D capital. From this perspective a government-run compulsory social security scheme appears highly retrogressive. Apart from the dubiousness of the procedure whereby the government spends the net premium income on current consumption while letting future taxpayers shoulder the burden of disbursing the retired population, there is the more subtle and sinister problem of depriving the inventor from his traditional source of financing. The inventor is condemned to idleness. At any rate his efficiency is greatly reduced and his talent wasted. The government-run social security scheme is retrogressive because it dissipates the annuitant's income and the annuitant's wealth without any redeeming features as to promoting capital accumulation, especially the accumulation of R&D capital.

We have seen that the four corners of the square model represent the annuitant, annuitant, entrepreneur and inventor. We have looked at two kinds of partnership that correspond to the formation of entrepreneurial capital (embodied by the partnership between the annuitant and entrepreneur), and that of R&D capital (embodied by the partnership between the annuitant and inventor). Often these partnerships are concealed under family bonds. The father is the annuitant (later, annuitant); the sons are the entrepreneur and, possibly, the inventor. The family is the social unit providing a primitive framework for the exchange of income and wealth among its members as the need may arise. Name-plates such as "Smith & Sons" herald exactly such an exchange.

The Pentagonal Model

The relative bargaining position of the four participants in the square model fails to be symmetric. In particular, the providers of credit, the annuitant and annuitant, do not depend on the exchange in order to reach their ultimate ends, unlike the users of credit, the entrepreneur and inventor, who do. One fatal shortcoming of the diagonal model, and the equilibrium theory of the capital market, is the failure to reflect this fundamental lack of symmetry.

Zero interest means the denial of incentives to proceed with the exchange of income and wealth. Given this denial, the providers of credit shall abstain from the exchange and fall back on direct conversion. The annuitand will convert his income into wealth through hoarding, and the annuitant will convert his wealth into income through dishoarding. It would be absurd for the former to exchange income for wealth not greater than that he could himself accumulate through hoarding, and for the latter to exchange wealth for an income not greater than that he could himself generate through dishoarding.

The entrepreneur and inventor are the losers if exchanges dry up. For them zero interest is an un-surmountable obstacle to capital formation. The entrepreneur's potential income would not be generated for lack of entrepreneurial capital. The inventor's potential future wealth could not be realized for failure to accumulate R&D capital. He is forced to abandon his project to make the production cycle more roundabout, and hence more productive, as he lacks financing and sustenance.

We see that zero interest, *i.e.*, the absence of credit, is equivalent to direct conversion of income into wealth and wealth into income. It forces the annuitand and annuitant to revert to the atavistic method of conversion via hoarding and dishoarding the most hoardable commodity. At zero interest there is no exchange, only direct conversion of income into wealth. While the annuitand and annuitant do have a choice, the entrepreneur and inventor do not. The latter are fully dependent on the agency of exchange and credit if they want to convert. The square model reveals that the exchange of income and wealth is inherently asymmetric. The annuitand and annuitant can still satisfy their need if the exchange fails; the entrepreneur and inventor cannot. For them it is no exchange - no conversion.

This impairment of the bargaining position of the entrepreneur and inventor can be somewhat assuaged by the services of a fifth protagonist entering the capital market. As we pass from the square to the pentagonal model the marginal entrepreneur and the marginal inventor, who have been left out in the cold, can be accommodated as follows. They could form a partnership whereby the entrepreneur provides the income needed by the inventor to complete his project. The partnership will be net long of present wealth and net short of future wealth. But in as much as present and future wealth are not exchangeable in the absence of credit, the partnership is not viable. The entrepreneur and inventor must find a third partner who is willing to provide the needed credit in offering present for future wealth. This need has led to the emergence of a new actor in the drama

of human action. He is the *capitalist*, and his entry heralds the advent of the pentagonal model of capital markets.

The Troika of the Entrepreneur, Inventor, and Capitalist

The rise of the capitalist is hereby explained not in terms of exploitation, but in terms of services only a specialist can provide. These services are demanded by the partnership of the marginal entrepreneur and the marginal inventor. The former is the entrepreneur who has just missed his chance to form a partnership with the annuitant, and the latter is the inventor who has just missed his to form a partnership with the annuitand. Without the services of the capitalist their talents would be lost to society. Thus capitalism must be seen as the social system which allows individuals to specialize in the exchange of present for future wealth in order to enlarge the scope for entrepreneurial and inventive talent. Before the advent of capitalism marginal talent was wasted. Now, with the participation of the capitalist, society is able to realize the full benefit of talent possessed by its members. The result is obvious if we look at the remarkable technological and commercial progress in the world after the advent of capitalism.

The triangular partnership of the entrepreneur, inventor, and capitalist, or troika for short, is the most potent and dynamic force in the economy that society has heretofore produced. Ludwig von Mises considers members of the troika the “most progressive elements” in capitalist society. They benefit the non-progressive majority in every possible way. The particular combination of talent, brain and will-power represented by the troika heralds a new epoch of progress, far beyond the capabilities of individual talents if employed in isolation.

There has been many an inventor since paleolithic times whose genius was wasted. The steam turbine was invented in the first century A.D., by Hero of Alexandria, and the airplane in the fifteenth, by Leonardo da Vinci. The efforts of pre-capitalistic inventors, for the most part, came to naught, due to lack of capital. The most ingenious technological inventions remain useless if the capital required for their utilization has not been, or cannot be, accumulated.

The Capitalist as the Patron Saint of the Common Man

Capitalism must be seen as the liberator of inventive talent, the creator of wealth and prosperity for the benefit of all. Its creative formula is the troika of the capitalist, entrepreneur and inventor. One cannot assess the merit of capitalism without explicitly recognizing the great and durable reduction in the rate of interest it has brought about. Indeed, the only valid way to bring down the rate of interest is to enhance the bargaining power of the partnership of the entrepreneur and inventor *vis-a-vis* the annuitand and annuitant, through encouraging the activities of the capitalist. If the latter is hampered in his business, then the partnership of the annuitand and annuitant will enjoy monopoly power and, as a result, the rate of interest will be high. The capitalist is the only actor that can offer competition for the monopoly. As a result of this competition the rate of interest has been reduced from the extremely high levels prevailing in pre-capitalistic times to a low level that puts all *bona fide* inventors and entrepreneurs in business. Even more remarkable is the fact that capitalism has accomplished the feat of reducing the rate of interest without harming the annuitand and annuitant. Every member of society, regardless of his contribution to the success of capitalism, is a beneficiary of the lower rate of interest brought about by capitalism, through the great increase in the availability of consumer goods at affordable prices, not to mention higher wages due to the increase in the marginal productivity of labor and capital, made possible by countless inventions. Only with reference to capital accumulation can we explain the practically inexhaustible list of prodigious amenities, and previously unheard-of comfort and security, all benefiting the common man, which is due solely to the lowering of the rate of interest through the activities of the capitalist.

Runaway Vibration

Many of these great achievements have been frittered away since 1971, the year governments of the industrialized world declared irredeemable currency “money”, thereby destabilizing the interest-rate structure. Starting that year the world has been treated to a spectacle of gyrating rates of interest the like of which has never been seen before. First, an arbitrary increase in the level of interest rates rendered a vast amount of capital and labor submarginal, causing the closure of production facilities, resulting in unemployment, inadequate capital maintenance

and, ultimately, capital decumulation and destruction. To combat outrageously high interest rates governments unleashed the scourge of speculation. Let us bypass the fact that this intervention was disingenuous as the government itself was responsible for the destabilization of interest rates in the first place. Let us focus on the fact that not only has speculation aided and abetted by the government brought down the rate of interest, but it is also responsible for making it to plunge to zero. Speculation also makes the volume of activity in the credit markets to grow at an exponential rate as derivatives such as bond futures and options proliferate at a prodigious rate. By now *speculative* activity represents a high multiple of the volume of *productive* activity.

Previously, the former was a low percentage of the latter, as speculation was limited to addressing risks created by nature to the exclusion of risks created by man. In 1971 this limit was forcibly removed. Speculation addressing risks created by man, that is, by governments and central banks (e.g., interest and foreign exchange risks) started to overwhelm the economy and, by now, it is increasing at an exponential rate in good times as well as in bad. The artificial creation of risks has caused a chain-reaction of speculative activity with unforeseeable destructive consequences. As we shall see, volatility of the rate of interest is matched by that of the price level. Moreover, the two are linked. This linkage leads to resonance between the gyrating rate of interest and the gyrating price level. Resonance brings about *runaway* vibration as manifested by exponentially increasing amplitude (the exact opposite of the more common phenomenon of *damped* vibration). The runaway vibration of the rate of interest and the price level hits the economy with ever greater destructive force. Unless a valid policy of stabilization is put into effect, and soon, the ever widening swings in the rate of interest and the price level threaten the economy with collapse. I shall return to the problem of runaway vibration in the economy in a later Lecture entitled Bond Speculation.

Rising Interest Rendering Capital Submarginal

I have mentioned that an increasing rate of interest causes capital invested in production to lose value. The reason for this is the mathematical fact that the present value of future income falls when capitalized at a *higher* rate of interest. Indeed, the present value of income is calculated by discounting future payments at the going rate of interest. Thus any increase in the latter immediately slashes

values that owe their origin to capitalization of incomes. An unwelcome side-effect is that the value of all production goods falls *pari passu* with the rise of interest rates, regardless of their productivity. In particular, much of the park of capital goods society has is rendered submarginal and, sooner rather than later, their productive life must come to an end. Production and employment will shrink in consequence of rising interest. But since interest rates have risen capriciously as a result of the government's embracing irredeemable currency, there appears to be no real justification for falling production and growing unemployment. Authors of the Brave New World of fiat money have forgotten to take the murderous effect of rising interest on production into account.

Suppose that you are a dealer selling tractors, and the rate of interest rises. As if by magic, all tractors on your lot lose value instantaneously. Nobody will pay the old price knowing that the contribution to production expected from the tractor is less than the sticker price. Thus, without any change in the tractor's physical condition, or in the circumstances of its application in the field, the value of the tractor has been slashed. The new price is still determined by the present value of future income that buyers expect to derive from its use. But since that income is now discounted at a higher rate, the new price will be lower.

Of course, capital goods already deployed in production also lose value for the very same reason. The entire park of capital goods in the country is decimated. Moreover, this loss of value is irreversible. Submarginal capital withdrawn from production will no longer be maintained. Even if the rate of interest comes down later, value is gone, never to return. Society has been inflicted a permanent loss of capital values which has no justification nor redeeming features. It is the result of insane monetary policies, in particular, the destruction of the gold standard and its consequence: the destabilization of the interest-rate structure.

Falling Interest: Good or Bad?

Superficial thinking may suggest that if a rise of interest rates is bad, then their fall is good. Not so. A falling rate of interest is even more damaging for the economy than a rising one. I am aware that my thesis is highly counter-intuitive. I have been challenged by other economists who deny the validity of my contention. They argue that if the present value of future income is lower when discounted at a higher rate of interest, then it must be higher when discounted at a lower

rate. We may admit that this statement is true. However, it has no relevance to the case under consideration. The firm must be around in order to collect the future income whose present value would be higher as a result of lower interest rates. The point is that many of them won't be, as they succumb to capital squeeze caused by falling rates.

My critics hold that falling interest rates are always beneficial to business and, as such, could not aggravate deflation. (Here deflation means the combination of falling prices and falling interest rates). They are confusing a *falling* with a *low* structure of interest rates. While the latter is beneficial, the former is lethal to producers. When interest rates are falling, the low rates of today will look like high rates tomorrow. *A prolonged fall in interest rates creates a permanently high interest-rate environment.* This paradox explains the reluctance of the mind to admit that a prolonged fall in the rate of interest spells deflation and, possibly, depression.

Worse still, falling interest rates mean that business has been financed at rates far too high. This fact ought to be registered as a loss in the profit/loss statement, and be compensated for by the injection of new capital (much the same as would losses caused by damage to plant and equipment due to war, for example). Instead, businesses choose to ignore the loss, and they merrily go on paying out phantom profits in the form of dividends, further weakening capital structure. When they plunge into bankruptcy, they wonder what has hit them. They don't understand that they have failed to augment their capital in the face of falling interest rates, and their downfall is due to insufficient capital. I shall return to this problem in a later Lecture entitled "Accounting under a Falling Interest-Rate Structure".

Bond Speculation is No Zero-Sum Game

Once more we see that damage is caused by the destabilization of the interest rate structure. Under the gold standard interest rates were stable, as were bond prices. Bond speculation was unknown. Arbitrageurs saw to it that bond prices remained stable in the face of temporary setbacks due to natural causes such as floods, earthquakes, and crop failures. Destabilization came as the gold standard was destroyed by governments advised by doctrinaire economists with vested interest in inflation. They justified inflation as "the lesser of two evils". They abhorred the thought of deflation. What they utterly failed to grasp was that

their policies were to cause *both*. In fact, they made the Kondratieff long-wave cycle, consisting of alternating inflationary and deflationary spirals, to get out of control. It was criminal negligence of gigantic proportions on their part that they never investigated the more remote consequences of the destruction of the gold standard. Of course, the inflationists realized that their anti-gold policies would destabilize the value of the national currency and unleash speculators in the foreign exchange markets. They welcomed this as a salutary development, and pointed to the manipulation of monetary policy as a means to their nationalistic and autarkic ends. What they didn't realize was that the destruction of the gold standard would also destabilize the interest rate structure, and unleash speculators in the bond market. Fluctuations in interest rates due to the Kondratieff long-wave cycle would be aggravated. Nor did they realize that a prolonged fall in the rate of interest is extremely deflationary and could plunge the economy into a depression. This point is still not widely appreciated, and the world appears to be completely ignorant of the dangers of depression brought about by the destruction of the gold standard albeit with a thirty-year delay. Economists of the present vintage have been trained to see in the gold standard the direct cause of depressions. This is the exact opposite of the truth, as the following discussion will reveal.

Bond speculation is no zero-sum game. Virtually all speculators are on the long side of the bond market as they want to preempt the central bank in buying the bond. (Note that the central bank makes bond speculation *risk free* through its open market purchases of bonds.) Who are on the short side? Why, the producers, of course. They are passive participants with their capital at stake, whether they like it or not. They have literally no choice in the matter. They have been turned into sitting ducks in this unconscionable shoot-out for the benefit of speculators by deliberate government policy. Moreover, the producers are quite unaware of what is going on. In particular, they are completely oblivious to the fact that they are served up as the sacrificial lamb on the altar of government omnipotence. Bond speculation aided and abetted by government is responsible for denuding producers of their capital and for transferring their wealth to the speculators in the form of unprecedented profits on their long positions in bonds. I shall return to the destructive aspect of bond speculation in a later Lecture.

We may conclude that the best economic climate for all the non-parasitical elements of society is the one with a stable interest-rate structure, such as the one provided by the regime of a gold standard. It is charged that in the 19th and the 20th centuries the gold standard failed to stabilize prices. However, in a

dynamic economy admitting growth the stabilization of prices is neither possible nor desirable. *The great merit of the gold standard must be seen in the feat that it has stabilized the interest-rate structure so as to prevent the financial sector from becoming a vampire sucking the life-blood of the producing sector.* It must be realized that this is an unstable world, and the best one can do is to stabilize interest rates (as well as foreign exchanges) by adhering to a gold standard. Prices will then take care of themselves.

The Shylock Syndrome

The analysis of the phenomenon of interest in terms of the pentagonal model of the capital market is far superior to the conventional. While the latter admits only the exchange of present and future goods, the former incorporates the exchange of income and wealth as well. The exchange of present and future goods by itself is wholly inadequate as a basis on which to build a theory of interest. Apart from the fact that no one has ever exchanged an apple available today for 1 and $\frac{1}{20}th$ of an apple available a year from now (still less for 2 apples available 50 years from now), the problem of exchanging present for future wealth does not arise from any readily identifiable human need, except in the context of the activities of the capitalist in augmenting the exchange of income and wealth as discussed above. Other than this residual activity the exchange of present for future wealth has no basis in reality.

By contrast, the problem of exchanging of income for wealth arises out of a natural and universal human need: that of the elderly to live out their lives in relative comfort and security. This exchange explains the phenomenon and nature of interest in terms of division of labor, that is, by reaching back to lasting fundamentals. Exploitation, or temptation to exploit one's economically weaker brethren is not involved. Nor is *odium* or envy. The needs and aspirations of market participants, from the annuitant to the capitalist, are harmonious and complementary. There is no reason to detest the capitalist and depict him as Scrooge, any more than detesting the heart surgeon and depicting him as a butcher. They are both specialists, and their roles can only be understood in the context of the need for their specialized services. The capitalist's role only emerges at the margin, after all natural partnerships between the entrepreneur and the annuitant or the inventor and the annuitant have already been formed. At this point further improvement

would not be possible without the services of a specialist doing arbitrage between present and future wealth, as long as unemployed entrepreneurial and inventive talent may still exist.

If we look at the problem of exchanging present for future wealth in isolation, before long the image of Shylock and his pound of flesh is conjured up in the mind. Above all it was this Shylock-syndrome that the socialist movement was able to exploit with such consummate skill, appealing to the authority of Aristotle. In the present context it appears that this view is nurtured by a dismally inadequate understanding of division of labor. The compact between lender and borrower demands that the latter be a superman, uniting in himself the talents of the entrepreneur and the inventor as he wants to meet the terms of his contract in full. How otherwise could he be expected to return a greatly enhanced wealth to the lender at the end of the loan period, and stay in business, without ruining himself? Surely the terms of his contract giving the lender the right to cut out a pound of flesh from any part of his body at the option of the latter was designed with the extinction of his life in mind - according to the socialist's view. What this view disregards is the fact that the capitalist is not dealing with *one* individual, but with a partnership combining the talents and skills of *two*: the entrepreneur and the inventor. Had Aristotle understood the problem of converting income into wealth and wealth into income, and its optimal solution via the agency of exchange, credit, and division of labor, then the wind would have been taken out of the sails of socialist agitation before it had a chance to cause so much mischief in the world.

Instant Reward and Penalty

Another merit of the pentagonal model is that it makes the process of capital accumulation transparent. If we disregard the primitive accumulation of capital by the artisan fashioning his own tools, which no longer plays an important role in the economy, then we shall find that capital can only be formed in one of three possible ways: through a partnership between (1) the annuitant and the entrepreneur, (2) the annuitant and the inventor, (3) the entrepreneur, the inventor, and the capitalist. Debt-creation can never create capital *per se*, it only shifts risks implicit in previously existing partnerships without producing new wealth. By contrast, the formation of capital in any of the three ways described above does create new wealth, in particular, through capitalizing incomes.

Furthermore, the pentagonal model establishes precedence and control among the five actors in the drama of human action. Thanks to the existence of these controls, capitalism has become an instant reward/penalty system offering unprecedented efficiency. (This, incidentally, may be the reason why it is hated so by the indolent.) The priorities of capitalist society are not set by bureaucrats or zealots with the power of disposal over the fruits of the labors and savings of others, but by the laborers and savers themselves who stand to suffer losses if the project fails. Bureaucratic power under socialism means that mistakes can be heaped upon mistakes before correction is made, if ever. Socialism lacks a feedback mechanism that alone can make timely corrections possible.

The hierarchy of controls under capitalism runs along the following lines. The annuitant has veto power over the plans of the capitalist; the capitalist in concert with the annuitant has veto power over the plans of the entrepreneur; the entrepreneur in concert with the annuitant and the capitalist has veto power over the plans of the inventor. The inventor has no veto power at all, but in so far as there are more annuitands than annuitants, as obtains under a positive population growth and is therefore a characteristic of a dynamic society, capitalism can employ more inventive than entrepreneurial talent. A dynamic society tends to put a premium on new ideas. It has natural built-in incentives for higher education and advanced studies - even in the absence of compulsory schooling and governmentally sponsored research. It is these dynamic forces, measured by a surplus of R&D over entrepreneurial capital formed by the annuitand and the inventor, which create the educational facilities and equip the laboratories, without any trace of coercion. The government can hardly do more than coordinating and standardizing these. It certainly cannot guide their destinies. That would be the prerogative of their progenitor, the pentagonal capital market. A government that pretends to do more, in trying to dictate educational and research priorities, is far from being progressive. It is, in fact, retrogressive - as the present analysis shows.

Exploding the Myth of the Welfare State

Finally, the pentagonal model explodes the myth of the Welfare State. According to this myth the government can finance welfare projects by taxing away some of the profits of the capitalist. However, the activities of the capitalist only arise at the margin, and they represent but the tip of the iceberg. The incomparably greater

part of capital society depends on in order to provide annuity income for the aged is furnished by the less visible partnerships of the annuitant and the entrepreneur, as well as those of the annuitant and the inventor. Governmentally dictated social security eliminates, or at least severely curtails, voluntary exchanges of income and wealth, and thereby hampers capital accumulation. The Welfare State confuses charity with entitlement. Its huge commitment to place social security benefits on the basis of universality has no actuarially sound basis in finance. The making of these commitments puts the very people out of business whose savings alone can provide the wherewithal of projected benefits.

We cannot help but view the capitalist economy as a highly integrated welfare-machine: individuals voluntarily exchanging goods against goods, goods against services, and income against wealth. In the process they form voluntary partnerships, thus creating wealth by capitalizing incomes. The Welfare State cannot invade one part of this machine, taking over its functions, and expect that the other part will go on performing satisfactorily. This invasion means the forcible dissolution of partnerships and the dissipation of their capital. Yet the corresponding liability in the consolidated balance sheet of the nation remains. It will have to be balanced by new assets. The government pretends to do this by printing government bonds payable in irredeemable currency. As long as purveyors continue accepting irredeemable currency in exchange for real goods and services, the game of musical chairs will go on. There have been many precedents in history for such a game, and the music has always stopped at one point or another in all previous episodes. It will also stop in the present one, even though we may be unable to pinpoint the exact timing. Here is the reason why.

The capital of the nation is seriously eroded as it has been deprived of augmentation from capitalizing the income of the annuitant in partnership with the inventor. The deficiency of capital eventually shows up as increases in the cost of goods and services. Producers are squeezed and suffer losses. Some will succumb and get out of business; others will raise prices. Either way benefits promised are nullified by the side-effects of the blind policies of the Welfare State: capital destruction and currency depreciation. The alleged benefits must be set against this background: the so-called Welfare State has a hidden scheme to debase the currency and dissipate society's capital.

The last *étape* in this analysis of the process of capital accumulation will take us to what I figuratively call the hexagonal model of the capital market, and the appearance of the last protagonist of the drama of human action, the *investment*

banker, and his specialized instrument, the *gold bond*. This is the subject of the next two Lectures.

The Marginal Utility of Gold is Constant. True or False?

Gold Standard University participant George Weinbaum wrote me as follows: “I disagree that gold’s marginal utility is constant. I believe its marginal utility declines more slowly than that of any other item, and so it most closely approximates what may be regarded constant marginal utility.”

I hasten to concede the point, and I congratulate George on his keen sense of understanding. The commodity whose marginal utility declines more slowly than that of any other is very special. It will be hoarded in preference to other substances. In fact, it is what I have called “the most hoardable commodity”. There is a feedback-effect: the more this substance is hoarded the more nearly its marginal utility will be constant, ahead of all others. Its marketability in the small will snowball and eclipse that of all others. However, strictly speaking, there is no substance in existence with constant marginal utility, nor will ever be.

The most hoardable commodity, the one whose marginal utility declines more slowly than that of any other is, and has been since time immemorial, gold. In fact, this is the property that imparts to gold its quality of being money, and denies this quality to other substances or to debt instruments. The vast hoards (in terms of the stores-to-flows ratio) of gold in existence that were built up over thousands of years in response to gold’s unique property is the guarantee that no other commodity can displace gold in this regard, and no government or combination of governments can succeed in its efforts to “demonetize” it.

I took poetic liberty in saying that gold’s marginal utility is constant. This is acceptable as a first approximation, and it has given me the opportunity to simplify presentation.

Chapter 6

The Hexagonal Model of Capital Markets

(Lecture Six)

Enter: the Investment Banker

We have arrived at the final stage, what I figuratively call the “hexagonal model of capital markets” with its six participants: the annuitand, the annuitant, the entrepreneur, the inventor, the capitalist and, the last protagonist of the drama of human action, the *investment banker*. His entry was made necessary by the marginal annuitand and the marginal annuitant. The former is the one who has just missed his chance to form a partnership with the inventor, and the latter his, with the entrepreneur. Without the services of the investment banker the resources represented by the savings of the marginal annuitand and the marginal annuitant would be lost to society.

If the two formed a partnership whereby the former provided income for the latter, it would be net short of future wealth while net long of present wealth. It would take the skills of a specialist to nurture present wealth into future wealth of undiminished value. This specialist was the investment banker. He would invest the wealth of the annuitant in such a way that its value would grow and it could in due course be exchanged for income to pay an annuity to the annuitand. Under the gold standard the investment banker would buy gold bonds, the safest paper available for the preservation of wealth.

The Bond Market and the Rate of Interest

The hexagonal model of the capital market at last provides a sufficiently broad basis upon which the formation of the rate of interest can be explained. Since no two annuities and no two mortgages are similar, trading them without a common denominator would be virtually impossible and, as a consequence, the rate of interest would be highly volatile. *A regime of stable interest rates is not possible without the services of the investment banker, nor without a common denominator, the gold bond, to facilitate the trading of annuities and mortgages.*

As we shall see in the next Lecture entitled *The Bond Equation and the Rate of Interest*, the price of the gold bond is just the mirror image of the rate of interest. Although the two move in opposite directions, either one determines the other uniquely. For this reason we may define the rate of interest in terms of the price of the gold bond. Thus bond trading appears as the very market process responsible for the formation of the rate of interest. There is no market quoting the rate of interest directly. In order to find out what the going rate of interest is one must go to the bond market, get a quotation for the bond price, and calculate the rate of interest from there. In dealing with the bond market we must not forget that it is the epitome of a far larger and far more pervasive capital market encompassing all conceivable exchanges of wealth and income. Every such exchange, not just the purchase or sale of gold bonds, has an effect on the formation of the rate of interest.

The investment banker's function is clearing and brokering. He matches the various and varied demands thrown upon the capital market from its five corners. He must be prepared to enter into partnership with the annuitant, the annuitant, the entrepreneur, the inventor, and the capitalist, as the need may arise, through his specialized instruments of mortgage and annuity contracts. At the end of the day he balances the net liability or asset resulting from this activity through the purchase or sale of his standardized instrument, the gold bond. In effect, the investment banker is doing arbitrage between the bond market and the other five corners of the capital market. The result is the emergence of a *stable* rate of interest.

The hexagonal model of the capital market brings about a great increase in scope for the most successful combination of capitalist production: the troika of the entrepreneur, the inventor, and the capitalist, already mentioned in the previous Lecture. From now on they can form their partnership even if unbeknownst to one

another. The inventor need not waste time in seeking out a congenial entrepreneur, nor do the two of them in finding a suitable capitalist. If the invention is good and the enterprise sound, then they could start production on the most favorable terms immediately through the good offices of the match-maker, the investment banker. He will line up a capitalist to make the troika complete. Nor does the capitalist have to remain wedded to the same inventor and entrepreneur for the entire duration of the project. Through buying and selling gold bonds he can always go after the project that appears most promising to him. The problem of forming optimal triangles midstream can be safely entrusted to the bond market.

The Gold Bond and Its Sinking Fund

We have seen that the success of the capital market depends on a versatile and standardized trading instrument, the gold bond, that can be used as (1) the standard of capital values, (2) the balancing item of a liability on capital account. The gold bond evidences debt payable at maturity in gold, plus it provides an interest income in the interim, also payable in gold. The income is represented by the coupons attached. The gold bond is traded in a broadly-based secondary market.

It is absolutely necessary that principal and interest be payable in gold coin. A bond that is payable at maturity in irredeemable currency is not a financial instrument; it is a cruel joke. It means that the underlying indebtedness will never be extinguished. It will keep growing forever, and the danger is that its growth will ultimately accelerate and get out of control. The bond in fact is irredeemable: at maturity it will be replaced by another irredeemable bond, usually of inferior quality. One should not be misled by appearances that the face value of the bond is paid at maturity in irredeemable currency. That type of currency is inferior even to the irredeemable bond in that it does not have a yield. In today's world all bonds are irredeemable. Gold bonds have disappeared without a trace after Great Britain and the United States reneged on the last issues in the early 1930's. One should keep in mind that this does not mean that there is no demand for them. It only means that the powers-that-be would like to extirpate the memory of the gold bond in order "to make the world safe for plunder". We still don't know whether the attempt has succeeded or whether, perhaps, truth and justice will ultimately prevail, as it always has in history so far.

A gold bond is supported by a *sinking fund*. It is established by the issuer in order to make sure that the market value of the bond does not erode with time, as it might, making the rate of interest take a “slide” on the yield curve, a concept I shall discuss in a moment. It is incumbent on the issuer to keep the value of the bond stable, if need be, by retiring some of the outstanding issue prematurely. The manager of the sinking fund is a market-maker who would buy the bond at the lower bid price and sell it at the higher asked price. It follows that, under a gold standard, the sinking fund would not only protect the bondholder, but it would also be profitable to operate for the issuer.

A book¹ on sinking funds published in 1967 (*op. cit.*) suggested that their operation incurred extra costs that bondholders had to absorb in the form of lower coupon rate. The drift of the argument was that the issuers of debt were actually doing a favor to the bondholders in issuing it *without* sinking fund protection, a practice coming into vogue just about at that time. Of course, the suggestion that the bondholder may be better off without the protection of the sinking fund is disingenuous. The book was written to prepare the public for dramatic changes. Gyration of interest rates and bond prices were about to replace stable interest rates and stable bond prices, due to the coming destruction of the gold standard that has cast its long shadow forward. In such an environment the sinking fund would be exhausted in a matter of a few weeks, if not days. New arguments had to be invented to justify new practices. The book was paving the way to the euthanasia of the bondholder that was about to take place.

The Euthanasia of the Bondholder

The cynical phrase “euthanasia of the bondholder” was first used by John Maynard Keynes. He was well aware what the implementation of his schemes to sabotage the gold standard would mean to bondholder. Keynes treated the bondholder with contempt, as a parasitic element of society. He ridiculed coupon-clipping, calling it the only positive contribution the bondholder is capable of making to the commonweal.

In the event, euthanasia was turned into a bloodbath, the like of which the world has not seen since the night of St. Bartholomew. In view of the hexagonal model,

¹F. Corine Thompson and Richard Norgaard, *Sinking Funds - Their Use and Value*, New York: Financial Executives Research Foundation, 1967.

to disparage the bondholder is tantamount to disparaging the annuitant and the annuitant, that is, one's father and grandfather who, after a lifetime of faithful and diligent service expect to have a peaceful and secure retirement. The euthanasia of the bondholder means the euthanasia of dear old grandfather.

It is to the eternal shame of our Western Civilization that the crime of slaughtering the bondholders was permitted and even glorified, and no case study of the sufferings of the victims was ever allowed to be published.

The euthanasia of the bondholder was the ill star under which "social security" was born. The latter is a compulsory scheme based on socialistic principles. There is no actuarially sound way to fund the liability incurred by a universal social security program. In fact, it is an unfunded system financed through an open-ended tax escalator. Such a system is easy to introduce, as in the early days a relatively large number of workers support a relatively small number of eligible beneficiaries and the tax rate is nearly negligible. However, as the system reaches maturity a couple of generations later, the number of workers it will take to support one beneficiary declines drastically. This would happen in any case, but birth control, life-prolonging drugs and therapeutic procedures greatly accelerate the process. A reduction in promised benefits is out of the question and is regarded as political dynamite. The only alternative is to escalate taxes that finance the system. Just how long the taxpayers will be willing to carry the open-ended increases of burden is anybody's guess. It will eventually dawn upon young people that they will never benefit as the scheme is bound to collapse before they reach retirement age.

Compulsion can never do what spontaneous association can. We have seen in the previous Lecture that the "social security" scheme introduced in the 1930's dissipates the wealth of the annuitant and induces the annuitant to stop saving. There is also the sinister problem of depriving the inventor of his traditional source of financing, with incalculable consequences as to capital accumulation, in particular the capitalization of incomes, which society depends upon in order to provide the benefits and comfort to the retired population. Note that none of the problems associated with the compulsory scheme arise under the voluntary cooperation of the annuitant, the annuitant, the entrepreneur, and the inventor discussed in the previous Lecture.

The usual objection is that the voluntary system is not universal and it leaves indigent people out in the cold. This is not the place to go into a discussion of the validity of the Biblical admonition that "the poor will always be with us" and there will always be a need for charity, regardless of the level of affluence that society

may reach. We must reconcile ourselves to the objective fact that a compulsory social security scheme promising universal coverage is not viable and cannot be made viable. The idea could be sold politically only because people are prone to fall for Ponzi schemes, to the genus of which social security clearly belongs.

The Rise and Fall of the Yield Curve

Nowadays one hears frequent references to the “yield curve” or, as the case may be, to the “inverted yield curve”. It may come as a surprise that there was no yield curve under a gold standard. Multiple interest rates along with multiple foreign exchange rates belong to the paraphernalia of the regime of irredeemable currency, wherein a change in the price of crude oil, for example, could move both rates, and an increase in prices could provoke another increase in prices, as currency debasement looms large. Under the gold standard the rate of interest and of foreign exchange are stable and well-protected from shocks such as that in the price of crude oil, for example.

The yield curve represents the rate of interest as a function of time to maturity. It is considered “normal behavior” for the rate of interest to increase as the time to maturity is increased. Moreover, the rate of interest asymptotically approaches a certain value, the theoretical yield of a perpetual bond, as the time to maturity tends to infinity. This means that the normal shape of the yield curve is that of a rising one which nevertheless is bounded from above by the theoretical yield on perpetual bonds. A rising yield curve means that as maturity increases, the yield also increases. This is supported by the Principle of Time Preference (a concept that I shall discuss in a future course Monetary Economics 202, *The Bond Market and the Formation of the Rate of Interest*) asserting that, when given the choice between funds available in the remote or nearby future, the economizing individual will, other things being the same, choose the latter.

However, under “abnormal” credit conditions it can and often does happen that, as maturity increases, the yield actually *decreases*. In this case the yield curve is called “inverted” as it is falling (apart from a brief sharp spike near zero maturity). It still approaches the same value asymptotically as the time to maturity tends to infinity, but in this case the yield curve is bounded from below by the theoretical yield on perpetual bonds. Abnormal credit conditions mean that, as a result of loose credit policies pursued by the banks and the government, too many short-term

credit instruments approach maturity, which depresses their prices. Cash is scarce and the yield on short-term credit is high. The inverted yield curve may return to its normal state quickly, or it may last for an extended period of time, depending on the depth of the credit crisis which always accompanies it.

None of this may happen under a gold standard where the government and the banks are forced to keep their short-term liabilities safely within the limits of their quick assets. In fact, if all the gold bonds issued have sinking fund protection, as they should, then there is no yield curve. More precisely, the yield is the same constant value for all maturities (making the yield curve a horizontal straight line). The rate of interest is stable, both in time and across the maturity spectrum. A yield curve, if one existed, would create a temptation for the banks to borrow short in order to lend long. Such an activity would lead to periodic credit crises and the yield curve would get inverted as a result. I shall deal with these problems in more details later in this Course.

The fact that there is no yield curve under a gold standard does not mean that the rate of interest may not change. What it means is that all the adjustments are so gradual that they present no temptation for the banks to speculate in the bond market. On the other hand, if certain economic shocks (such as a continental crop failure, or pestilence wiping out a sizeable portion of the working force) calls for a big rise in the rate of interest, then it will be made quickly and expeditiously. Issuers of gold bonds will refund their obligation and sell a new issue with a higher coupon rate. In no case would they allow bondholders to suffer a loss. They take to heart the Biblical admonition that “tormenting widows and orphans is a sin that cries to high heavens for punishment”.

Arbitrage *versus* Speculation

I have mentioned repeatedly that there is no bond speculation under a gold standard. Subsequently I got several messages from my readers insisting that speculation actually has a role in stabilizing interest rates. However, what my readers referred to as “stabilizing speculation” is no speculation at all. It is arbitrage. The two must be carefully distinguished, something that mainstream economics has failed to do. The distinction becomes clear at once when we consider the objectives of the speculator and the arbitrageur. The former is willing to take big risks in the hope of a big payoff. The latter is not interested in risk-taking at all. The arbitrageur

steps in whenever the market shows deviant behavior. He makes his bet that the deviation will be corrected. Whenever a sufficient number of arbitrageurs do likewise, their market action will be self-fulfilling. Examples are deviations in the foreign exchange rates, or those in the rate of interest, under a gold standard. The arbitrageur takes it for granted that the deeds of the government are as good as its words, and it wouldn't knowingly mislead the market and pocket the illicit gains that originated in deception. Of course, any arbitrageur would quickly come to grief in today's foreign exchange and bond markets where deception is practiced by governments on a regular basis. It is not by accident that mainstream economists have failed to make a distinction between arbitrage and speculation in the bond market. They are lame apologists for the government out to cover up bad faith and chicanery.

Arbitrageurs have vacated the field, and speculators have taken over, as a result of the destruction of the gold standard. Contrary to mythology, under the gold standard it wasn't the central bank that kept the rate of interest and foreign exchanges stable. It was the arbitrageurs who believed in the good faith of the government in promising payment on their obligations in gold coin at a fixed rate. Without arbitrage the financial resources of the central bank would have been inadequate to stabilize the foreign exchanges, as well as the rate of interest. As I have said this is an issue that mainstream economics is unable to address. It has no mandate from its sponsors to use the language of good and bad faith in market dealings. However, there is no other way to deal with markets under the regime of irredeemable currency but through pointing out the deception regularly practiced by the government and its central bank in order to fool the public. This is why devaluations were always announced during the week-end when markets were closed. Prior to this government and central bank spokesmen had shouted from the rooftop that foreign exchange rates will "never" be changed. Next week politicians and central bankers had to eat their words. Nowadays this problem is avoided through the mechanism of floating foreign exchange rates. Note that "floating" is a euphemism for "sinking", as the international monetary system is merely a cover for competitive currency devaluations. At any rate, the outcome is the same: the fleecing of the producing sector (including the savers) and the enriching of the financial sector (including the treasury).

One Rate or Two?

I have pointed out that the rate of interest is the marginal efficiency of the exchange of wealth and income. It is determined through a market process, similar to that determining the price of wheat. But whereas the formation of the wheat price can be described through a simple diagonal model with the two poles representing supply and demand, the formation of the rate of interest is more complicated as there are at least two types of exchanges involved. Following this line of reasoning we have arrived at the hexagonal model of capital markets clearing all the exchanges of income and wealth. Just as the sale of every sack of wheat has an effect on the price of wheat, every exchange of wealth and income has an effect on the rate of interest.

My critics point out that if my analysis were correct, then there would have to be two rates of interest, one regulating the exchange of the income of the annuitant for the wealth of the inventor, and another, regulating the exchange of the wealth of the annuitant for the income of the entrepreneur. One rate or two, that is the question.

It is true that for gold bonds, no less than for wheat, the market quotes not one but two prices: a higher asked price and a lower bid price. Transactions take place between these two extremes. The spread between the two has an extraordinary theoretical importance. It is instrumental in setting a limit to the volatility of the rate of interest. In more detail, the higher asked price for the gold bond translates into the floor, and the lower bid price into the ceiling, for the rate of interest.

The reason for the inversion is the fact that the price of the gold bond and the rate of interest move inversely. It is imperative that the reader have a good grasp and a good visual image of this inverse movement, and the inversion of its extremities. (One way of visualizing this inverse movement is a pair of pistons of a reciprocating steam engine as they run up and down in their respective cylinders, always in opposite directions. Another way is the see-saw, a piece of equipment for children to play on, consisting of a long flat piece of wood supported in the middle. A child sits at each end and makes the see-saw move up and down.) I shall make frequent references to the reciprocating movements of the rate of interest and the price of the gold bond, by calling it the “see-saw”.

Stable interest rates under a gold standard are explained by the small spread between the asked and bid price of the gold bond. We may verbalize this by saying that the stability of the rate of interest under a gold standard is the flip-side

of the narrow bid/asked spread for the gold bond. By contrast, wildly gyrating interest rates, as experienced under the regime of irredeemable currency, reflect the yawning gap between the asked and bid prices of bonds. The gap is the only clue we have to explain unstable credit conditions.

So why is there a unique rate of interest under a gold standard when, on the face of it, there ought to be two, one at which income is exchanged for wealth, and another at which wealth is exchanged for income? Here is the reason why. Those who want to exchange wealth for income are the buyers, and those who want to exchange income for wealth are the sellers of the gold bond. To say that the two rates, one involved in exchanging wealth for income and the other income for wealth, are not equal is the same as to say that there is a wide gap between the asked and bid prices of the bond. The investment banker and the managers of various sinking funds act as market-makers in the bond market. They buy the gold bond at the lower bid price and sell it at the higher asked price. They profit from the existence of a wide spread between the two. As a result of their arbitrage the spread narrows and the two rates get closer. Even though profits from this arbitrage disappear together with the spread, the investment banker and managers of the sinking funds will continue in this business. Their primary task is not to profit from the arbitrage; it is to make a market in bonds. We conclude that under a gold standard the bid/asked spread of gold bonds is negligible, and for all practical purposes the rate of interest is one and the same for all maturities.

Deterioration in the Quality of Credit

If the bid/asked spread for bonds widens, it means that the market-makers in the bond market are hampered in their bid/asked arbitrage. Either the sinking fund protection of bonds is being withdrawn, or the investment banker is intimidated by a torrent of new inferior bond issues. The widening in the bid/asked spread measures the deterioration of credit.

In these terms, the 20th century witnessed an unprecedented deterioration in the quality of credit, one that mainstream economists prefer to ignore. The landmark was the government's default on its gold obligations. This was followed by the dismantling of the sinking fund protection of the bondholders. Finally, the gold clause on bonds were declared "contrary to public purpose" by the government. As a consequence arbitrageurs have abandoned the field and speculators have taken

over. The latter are now in the driver's seat, and bond speculation is increasing by leaps and bounds.

In the 19th century self-respecting governments and companies would not have tolerated that the value of their obligations become a plaything in the hands of speculators. As a matter of fact, there were no bond speculators since there was not enough volatility in the price of the gold bond to make speculation profitable. Things are very different today. Ever since the last link between the dollar and gold was severed in 1971, the volume of bond speculation has been increasing at an exponential rate. Today gold bonds are historical relics. Governments won't put up with any meaningful competition against their obligations denominated in irredeemable currency. They know full-well that their issues would not stand a chance in such an environment.

A gold bond is an obligation that is payable, not in terms of itself, but in value existing *outside and independently* of the promises of the issuer. A government bond of current vintage is an *obligation* redeemable in an inferior instrument: a *non-obligation*, to wit: in non-interest-bearing irredeemable currency. This shatters the logical basis supporting the value of the bond. But this is not all. Ostensibly the value of irredeemable currency is supported by the assets against which they are issued as a liability on the books of the central bank. As these assets are the very same government bonds which promise to pay irredeemable currency to the bondholder at maturity, the logical basis supporting the value of the currency is shattered, too. The relationship between the government bond and the currency is an incestuous one, on which it is not possible to build long-term prosperity. These are fundamental problems that are not being addressed while fair weather lasts. In the meantime forces promoting foul weather are gathering steam. It is doubtful that these fundamental problems can be dealt with after the storm has begun.

Fleecing the Producers

If the logical basis for the value of government bonds has been shattered as it promises to pay its face value in nothing but itself, the question arises what then supports the value of these bonds? The answer is that government bonds are the very chips one needs in order to play in the casino otherwise known as the bond market.

The destruction of the gold standard by the government was thoroughly immoral, but the matter did not end there. It has corrupted the bond market right to its core. Today nobody in his right mind would try to save by holding the bond to maturity. The bond market is the haunt of speculators. It is a casino for gambling. The bond is the chip to be used at the gambling tables. Yet there is an important difference between the operation of the bond market under the regime of irredeemable currency, and the gambling casino. In the latter the gains of one gambler is the loss of another. This is also expressed by saying that gambling at the casino is a zero-sum game. Its effect on society at large is nil.

It is quite otherwise with bond speculation. Here we have a casino wherein the players can fleece outsiders. In a later Lecture I shall deal in full details with bond speculation and its effect on saving and production. Let it suffice here to state the bare fact that the bond market is a casino where speculators risk not their own funds but those of the savers and producers. As a result, the latter are always the losers, even when they haven't the slightest intention to play. We have an insane arrangement whereby productive activity is penalized and gambling activity is rewarded. As a result, the volume of productive activity constantly shrinks while that of financial activity constantly expands. Moreover, the latter expands at an exponential rate, as the financial markets attract all available funds, gobbling up the capital of the producing sector. Most ominous of all, talent is no longer attracted to production, entrepreneurship, and inventive activity. Capable young people choose vocations related to the financial sector, the only place where they can hope to earn adequate rewards.

To recapitulate, under a gold standard capital markets function efficiently to channel the funds of savers to finance production for the benefit of the entire society. Their operation is accurately described by the hexagonal model which in particular explains the formation and stability of the rate of interest. Capital markets have been corrupted by the destruction of the gold standard. The rate of interest has been destabilized, inviting bond speculators to turn the capital markets into a gambling casino where the producers and savers can be fleeced. The moral responsibility for this subversion must be borne by the government and the profession of the economists for its failure to inform the public of what is happening.
